

Field Book

No. 59

no. 19, 271

to no. 19, 931.

of

Willis Linn Jepson

If lost finder please
return and receive
reward from W.L. Jepson,
11 Mosswood Road,
Berkeley, California.

Meadow Valley, Plumas 1
Co., July 27, 1939

- Left Berkeley at 12:00
o'clock today; drove to Little
Oak^{*}; got a hot engine and
was delayed an hour; went
on to Woodland, Knights Ldg.,
Oroville, where I had dinner
at the Oroville Inn. On up
the Oroville to Quincy, then
back to Meadow Valley to
the University of California
Forest Camp where I was
welcomed by Professor E.
Fritz at about 9:30 in the
evening.

* At the owl village below
Vanden there were three ^{ground} owls
outside their holes, as I passed.

There are about 100 forestry students here.
They eat in one mess hall; they devour food
with greatest possible rapidity and are
through in no time at all. The spec-
tacle recalls hogs at a trough in a pen.

— *Pinus ponderosa* vs. *Pinus jeffreyi*. Prof. E. Fritz says:

1. Yellow Pine, yellowish-green foliage.
Jeffrey Pine, blue-green foliage.
2. Yellow Pine yields turpentine.
Jeffrey Pine yields no turpentine.
3. Yellow Pine branchlets have odor of
Jeffrey Pine branchlets have odor of heptane.
4. Yellow Pine

— Quincy. In front of the Court House of Plumas Co., a man hangs to a gallows tree — an effigy of a man but sufficiently life-like to be truly gruesome. The gallows tree is to advertise a rodeo or fiesta.

— Thos. P. Adams, son of Professor Frank Adams. Collects plants a lot.

— Roy W. Saarni, fair-haired with a smooth face; collects a lot.

— Edmund C. Stone, fair-haired with a fringe of a beard; collects plants greedily; collected *Darlingtonia* in flower.

The three above students went with Professor Fritz and myself on the trip to Parker's Cabin. See p. 7 seq.

— A thunderstorm broke over the Sierra Nevada today July 29. It rained here at Meadow Valley in the afternoon. The next day we go to Parker's Cabin (see p. 7) and find sheets of rough ice here and there ^{small} beneath the trees. It is found to be conglomerated hail stones the size of small marbles.

4 Spring Hill Trail, Meadow → Valley, Plumas Co., July 29, '39 5

no. 19.271. *Kalloggia*
Open fir forest, dry ridge

no. 19.272. *Carex*
Achene triangular with
grooved angles. This caricoid
plant is infrequent in the open
forest on dry hill slopes.

no. 19.273. *Chimaphila umbellata*
Bart. var. *occidentalis* (Rydb.) Blake
Underground running roots.
stocks several feet or even yards
long. A bud is developed on a
rootstock, it produces a leafy
shoot which functions age-
tatively 2 or 3 or maybe 4 years
before producing a flower cluster.

no. 19.274. *Campanula*
Common on dry slopes in
open white fir forest. *

no. 19.275. *Hieracium albiflorum*
With 19.274.

* style stigmatic only on one side.

no. 19.276. *Bremus erectianus* Vasey
(Det. Beecher Crampton, 8/22)
This grass is not
common but is fairly frequent on
dry slopes in open Yellow Pine-
White Fir forest.

no. 19.277. *Gayophytum*
With 19.276

no. 19.278. *Silene*
Circular colonies, the
flowering stems ascending from a
decumbent leafy base, the
short sterile leafy shoots adding
to the rough carpet formed by
the plant on dry slopes in open
forest.

no. 19.279. *Pentstemon Lemmonii*
Gray. Corolla yellow, the throat
purple-brown lined, the lower lip
aging purple or sordid-brown. dry
open slopes, rare.

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Spanish Creek headwaters, between
Fales Hill and Chaparral Hill, Plumas Co.

No. 19, 280. *Glyceria elata* (Nash.) Hitchc. ^{5200 ft}
(det. Beecher Crampton 8/77)

This grass is about
5 to 6 ft. high, in a wet shady
margin of a bog. Erect.

No. 19, 281. *Sidalcea*

In a hillside bog; erect. Cor.
sidalcea-color!!

No. 19, 282. *Aster*

Dry meadow. Rays ^(few) lavender,

No. 19, 283. *Helenium*

Bog. Only two individuals seen.

No. 19, 284. *Aster Andersonii* Gray

Bog. Rays purple-lavender, few.

Rootstock stout, short, horizontal,
bearing one stem.

No. 19, 285. *Scirpus microcarpus* Presl.

Bog.

No. 19, 286. *Carex*

Bog.

No. 19, 287. *Darlingtonia*

Very wet hillside bog.

July 30, 1939

7

- Drove this morning from the Univ.
Cal. forest school to the headwaters
of Spanish Creek near Old Packers
Cabin on old Mountain House road.
between Fales Hill and Chaparral
Hill, Sec. 31, T 25 N, R 8 E.

Here we found an open or meadow
in the forest with a ^{wet} bog on a
hillside well colonized with
Darlingtonia californica. In the
party were Professor Fritz, who
took us in his car and the
three forestry students named on
page three. Here I collected nos.
19, 280 to 19, 287.

The hail of yesterday (see p. 3) cut
off many needles from the pine, so that
we noticed the litter of fresh leaves
in the roadway. In the meadow (see
above) the ^{large} pitchers of *Darlingtonia*
californica were all figured by
hailstones; the umbels of *Sphern-*

sciadium capitellatum were mostly broken and hanging limp on their stems, and nearly all flowering plants of any size in the meadow were more or less injured by the hail stones. The plants which notably escaped were *Carex* species and *Juncus* species.

5000 ft.

July 31, 1939.

- Drove westerly to Buck's Valley with Prof. E. Britz, through the forest. On a rocky thinly wooded slope west of Meadow Valley collected:

No. 19, 288. *Cordylanthus bolanderi* (Gray).
See p. 19.

No. 19, 289. *Pentstemon densatus* Dougl.

No. 19, 290. *Galium*
berries black when ripe.

No. 19, 291. *Eriogonum umbellatum* var. *polyanthum*
(See p. 18)

No. 19, 292. *Silene californica* Durand.
See p. 20. *nauseosus* var.

No. 19, 293. *Chrysothamnus speciosus* (Nutt.) Hall
See p. 20.

No. 19, 294. *Cheilanthes siligiosa* Maxon

This fern on dry rocky s. slope.

No. 19, 295. *Pentstemon lemmonii* Gray.

On open rocky brushy slopes. With no. 19, 296.



Pentstemon: corolla microscopically glandular on the outside.

Petioles joined by a narrow transverse membrane.

style glabrous.

Fertile stamens glabrous above base.

Sterile fil. hairy on one side, dilated and hairy at base. Anther cells dehiscient to base or nearly, then exsertate.

Sterile filament. →

Sterile fil.

Herbage notably glabrous.

Cov. yellowish, the upper lip a bit purplish-brown.

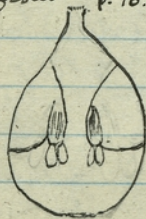
Cont. p. 10.



Fertile (stamens). filaments glabrous, at base dilated into a roundish disk, very hairy on the inside; glabrous on the outside (next to corolla). Filaments with the above dilation at base and hairy at base!!

Petioles of leaves united in pairs by a very narrow but distinct band of tissue. See below.

- Cont. from p. 16. *Nema löffii* no. 19, 314.



ovules 4, pendulous
in pairs on the two
placental tissues
arising from each
wall.

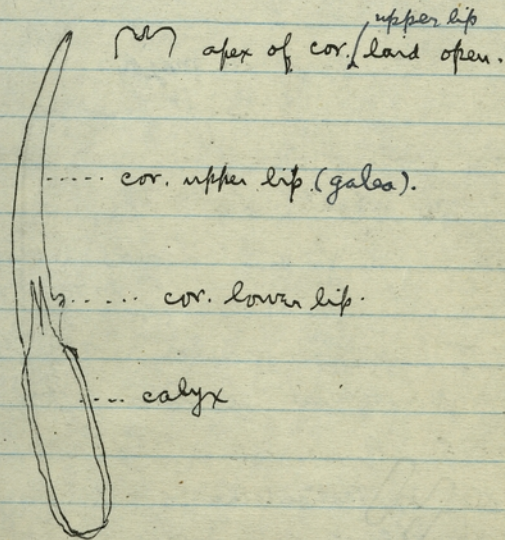
Slender calyx. lobes lying in the
grooves of the corolla!! even in
age!

- Cont. from p. 9, no. 19, 288. Distended
throat below lower lip with 9 longi-
tudinal equably spaced purple lines.
Lower lip with 7. longitudinal pur-
ple lines, 3 running out onto the
lobes, a pair on either side of the
central one; those running centrally
out lobes stopping $2/3$ the way out.

July 31, 1939.

- Drove on westerly (see itinerary note on
p. 8 ante). In a gully, with living stream
half-way between Meadow Valley and Buck's
Valley, stopped to collect following:

No. 19, 296. *Bastillea pinetorum* Per.



Somewhat moist hillslope of cañon.
Heads a little small, but normal at this
locality.

No. 19, 297. *Mimulus guttatus* DC.
Stream border.

5500 ft.

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Cañon bottom (lining stream, steep south slope) half way between Meadow Valley and Buck's Valley, Plumas Co., July 31, 1939.

No. 19, 298. *Melica aristata* Thurb. ex Boland.
(det. Beecher Crampton, 8/77)

Spanish Peak, lower slopes.

This grass is rare in individuals. Moist bottom of cañon.

No. 19, 299. *Minulus moschatus*
Dougl. Cor. yellow. Moist bottom of cañon.

No. 19, 300. *Boykinia major*
Moist bank in cañon bottom. Cor. white.

No. 19, 301. *Epilobium*
Herbage glaucous. Moist bottom of cañon.

No. 19, 302. *Campanula*
Moist bank in cañon bottom. Cont. on p. 18.

No. 19, 303. *Monardella odoratissima*
Moist bank in cañon. Oth.

No. 19, 304. *Carex*
Cañon bottom, wet soil; extremely heavy stool.

No. 19, 305. *Elymus glaucus* Buckl.
(det. Beecher Crampton, 8/77)

This grass in moist cañon bottom

No. 19, 306. *Cinna latifolia* (Trev.) Griseb.
(det. Beecher Crampton, 8/77)

This grass in wet cañon bottom.

Spanish Peak, lower slopes.

Plumas Co., July 31, 1939.

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6600 ft.

No. 19, 307. *Penstemon laevis* Gray.
Cor. blue-limb and throat, purple tube. Lower lip spreading horizontally or nearly; upper lip with recurved lobes; file and style all glabrous. Lower pair of stamens much the longer, their anthers extruded from the throat. Tube and throat very well differentiated. Anthers slit about $\frac{3}{4}$ way to base, the margins ciliate. Spanish Peak. Woody slope. Herbage glaucous. Cont. p. 16.

No. 19, 308. *Penstemon newberryi* Gray.
Cor. red. ↑ 7049 ft. Two hairy bands (broad) down palate. Anthers with woolly margins. Sterile filament rather short, hairy on one side upper half (most dense towards apex), $\frac{2}{5}$ as long as long anthers. Long-stamined anthers exerted in the sense of rising higher than the recurved or spreading ^(best upper lip) lips! Shorter anthers nearly as long. Spanish Peak Summit.

No. 19,309. *Erigeron inornatus* Gray.

6700 ft. Heads rayless, cylindrical (or slightly broadened upward, that is subcylindric, but cylindric mostly covers it). Flowers yellow, aging brownish. Cor. lobes oblong-triangular, brown-margined in age, microscopically scribbled on inside at apex. Achenes flattened, lightly strigulose. Infl. corymbose but many stems single-headed. Receptacle flat, bractless. Bracts unequal (in several series). Herbage puberulent.

No. 19,310. *Silene*

Petals white, quadrilaterally oblong, deeply notched (2 lines deep). Scales long-oblong, slightly and obscurely toothed above, at very apex. Claw with marked membranous shoulders ("auricles"). Spanish Peak summit. 7047 ft.

- Lightning. Prof. Z. Smith spotted a lightning struck *Abies magnifica*. Splinters of wood on the ground attracted attention - were spotted. Splinters of bark wood 3 to 8 feet long and 4 to 9 inches wide. They came from trees in the trees, say 125
- Cont. p. 19.

- Cont. from p. 14. Heads 2 to 2 1/2 lines broad.

Bracts with only a few strigulose hairs, not obviously glandular. No. 19,309.

No. 19,311. *Eriogonum umbellatum* var. *stellatum*. Filaments dilated on lower half, the lower half long-hairy. Perianth lemon-yellow. (rather densely) Spanish Peak summit. 7047 ft.

No. 19,312. *Aster integrifolius* Nutt.
7000 ft. Border of pond in moist soil; moist meadowlet. Rays 8, 8, 5, purple. Leaves, stems, involucres heavily glandular-pubescent. Achenes densely white-hairy. Corolla ^{of disk} yellow, aging brownish, especially the lobes. Just below summit Spanish Peak. Style eventually much-exserted from anther-tube.

No. 19,313. *Apocynum*

Spanish Peak, lower slopes.

Cor. pinkish-white, slightly constricted below the middle, slightly distended or ventricose above the constriction.

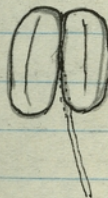
Cor.-lobes spreading or recurved from the middle. Corolla.

- Cont no. 19,307. *Peristemon* decumbent or ascending woody stems 12 to 18 inches long. Leaf-pairs joined across stem by a narrow and obscure but evident band of tissue in relief.No. 19,314. *Nema lobbia* Gray.

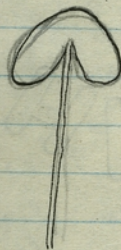
Style 2, wholly distinct, pubescent on lower half. Ovary 4, 4, 4. See p. 10.

Stamens 3 long and 2 short, all equally inserted at summit of proper tube, conspicuously decurrent on tube to base (markedly in relief), the longer nearly as long as throat. Corolla nearly cylindric with grooves or channels opposite the sinuses and rounded ridges between the grooves (that is,

July 31, 1939.

opposite the lobes). These features of corolla show markedly in bud, but the tube is also angled in full anthesis. Anthers versatile, ^(the two cells) united by their apices, free below the attachment to the filament.

anthers united on upper half, lower portions free; versatile-attached to filament.

anthers deliquescent in such a way as to make a sort of cap-like ^{rounded} structure on the apex of the filament

Sepals lanceolate-subulate, almost distinct, but with a distinct though narrow union at base. Cor.-lobes transversely suborbicular, overlapping a little at base.

- Cont. from p. 12. Campanula no. 19, 302.

Cor. pale blue. Style with the enlarged stigmatic portion a little over half its length. Filaments dilated downward in such a way as to be somewhat deltoid at base. Anthers slender, as long as the filaments. Cor. lobes linear, acute, a little united at base. Calyx-lobes subulate or narrow-lanceolate-acuminate.

- Cont. from p. 8. Eriogonum (no. 19, 291)

Rocky hill slope. Filaments conspicuously villous on lower $\frac{2}{5}$, only slightly or scarcely at all enlarged downward; virtually filiform. Leaves white-pubescent beneath. Flowers greenish-^{sulphur-}yellow.

- Cont. from p. 8. Cordylanthus (no. 19, 288)
Leaves

Corolla: upper lip galeate, strongly hooded, with a distinct slender cusp on front of hood, lower lip unlobed, nearly as long as galea, its margins infolded on margins of galea. Cor. greenish-brownish with purplish markings. All 4 stamen filaments conspicuously villous. Lower lip: lateral lobes represented by reversed membranous flaps (tined within; middle lobe with a narrow closely reflexed membranous border, the whole with a slight notch in middle. Lower sepal equaling corolla, upper sepal as if galeate and a little surpassing corolla.

Cont. from p. 15. first night when the gorging action of the lightning at the point it struck was very conspicuous. Hence the gash ran straight down the limb, shearing off a narrow line of bark to a point about 20 ft. above ground where it jumped to the trunk of an adjoining Red fir and seared (Cont. p. 32)

- Cont. from p. 8. *Chrysanthemum*, no. 19,293.
Heads slender-cylindric.

Bracts imbricated, markedly carinate.
Receptacle low-rounded, beset with a
few thin or membranous scales, most-
ly lanceolate ^{scuminate} with filiform tips, or
narrowly the scales irregularly laciniate.
Corolla-throat half as long as
tube. Style at ^{about} length prominently
exserted from anther-tube.

- Cont. from p. 8, no. 19,292. *Silene*
Petal limb 4-cleft half-way nearly,
the 2 lateral ^{obov.} small (shorter and narrow), the 2 median toothed at apex.
Cor. red.

** Cont. from p. 21. About 2 to 2½
miles from summit, a trail branches
off the wagon road and also goes to sum-
mit. I go along this trail for 200
yards, say, and find myself in a little
flat with the main ridge of Spanish
Peak rising sharply up from it westerly.
Here I collect nos. 19,318 to 19,323.

* No. 19,315. *Castilleja miniata* Dougl.
Not the same as 19,296, but more lux-
uriant, with larger heads.*

* No. 19,316. *Galium*

Dry slopes, in bushy
opens, rich soil.

* No. 19,317. Sterile (basal) shoots of
no. 19,315.

* No. 19,318. ~~*Erigeron*~~ *Chrysopsis* ^{*inversator* Gray.} *Breweri* A.
dry flat of openly forested
area.

* No. 19,319. *Sidalcea*.

Stems one from a root-crown,
sprawling or ascending. Utterly dif-
ferent in habit and aspect from #19,281,
the latter in wet bog, this on dry flat;
the former in a colony, the latter (19,319)
scattered individuals. Color of 19,319 paler.

XX See p. 20.

* Stems simple erect or slanting a little,
the colony with sprawling effect; the ground
loose, open; stems few, one from a
root-crown. A few ^{short} sterile shoots at
base.

- No. 19,320. *Gilia aggregata* Sps.
only a little of this.

dry flat.

- ✓ No. 19,321. *Angelica breweri* Gray.
In a hillside hollow, open but four-
bordered, forming a pure stand of
about three acres, now in full
flower, 4 to 5 ft. high. One sees
it in colonies and scattered indi-
viduals here and there on the
east-facing wall ^{or ridge} of Spanish Peak
which rises sharply westward from
the little flat described on p. 20 at **.

- ✓ No. 19,322. *Monardella odoratissima* A. N. S. P.

- ✓ No. 19,323. *Wyethia mollis* Gray
Ray. 7. Dry sandy flat.

- ✓ No. 19,324. *Radiola* ^{= *Rorippa*}
Pond margin near summit Spanish
Peak.

* for locality see bottom p. 20 at **

- ✓ No. 19,325. *Senecio triangularis* Hook.
On margin of meadow, lining edge
of brush, in very wet soil.

- ✓ No. 19,326. *Erigeron inornatus*
Gray var. ^{*inornatus*} Summit of Spanish Peak.

- On Wednesday evening, Aug. 2, Dr. Barr
of the Forest School and myself were in-
vited to dinner in Quincy in a
private house. There were present:
Supervisor of the Plumas Forest Rogers
and Mrs. Rogers; Mrs. Rogers daughter
and her husband Dr. Moore; and
another man whose name I did not
get. Rogers has a unique per-
sonality, a shrewd philosophy
which comes, perhaps, from his
state of Maine origin.

While ^{I was} waiting in the car in the
shade of a tree in the high

street of Quincy a fox terrier trotted across the street carrying a vertebral column of ^{bone} ~~bone~~ quite as large as himself. He wore an immensely look of satisfaction, first that ^{he} ~~they~~ immediately to be satisfied, but he also grinned placidly and radiated an air of contentment in that for the future he had done as well by himself. — Lee is the Deputy Supervisor on the Plumas. — From the top of Spanish Peak (cf. p. 22 ante), a wide view of the Sierras in this region is offered to the eye. One looks immediately below into the great bowl or hollow of Meadow Valley, and a little further eastward into the similar Quincy Valley, both encircled by high ranges. Out of Quincy Valley is rising the huge billowing masses of a huge forest fire for or six miles to right of the town. Northwesterly and northwesterly is the gorge of the East Branch of North Fork Feather River. Through a gap in the range beyond one sees a little of the flat floor of Indian Valley. To the left of this gap, in a cañon of the great wall ris-

ing beyond the East Branch a thin slender wisp of smoke, no larger than a thread, is rising from the forest. It is a lightning fire started from the storm of July 29 (see p. 3) and has not yet gotten a start.

At once six men were sent to smother it, but they could not hold it — and the next day 160 men were on that fire line; said Professor Tripp. — The forest at Univ. Cal. Forest School camp: *Abies concolor*; *Pseudotsuga taxifolia*; *Libocedrus decurrens*; *Pinus lambertiana*; *Pinus ponderosa*; *Pinus rhombifolia*; *Acas macrophyllum*.

The herb. and low shrub vegetation in the forest: *Adenocaulon bicolor*, *Chimaphila umbellata*, — these two abundant; *Campanula* (no. 19, 274), fairly frequent; *Symphoricarpos* (no. 19, 322); *Rosa* (no. 19, 318).

No. 19,327. *Symphoricarpos*

In this specimen, stems trailing along ground 4 or 5 feet and rooting at intervals, arising from a central root-crown which is bulbous after the manner of fire-reaction shrubs.

This species frequent in the forest. No flowers.

No. 19,328. *Rosa*

Common on the forest floor.

- Forest floor species: flowering or fruiting sparingly; *Symphoricarpos* (19,327); but freely reproducing vegetatively; *Rosa* (19,328); *Glimaphila* (reproducing vegetatively but fruiting well. Light on floor much filtered by tree crown canopy. Other species: *Pteris aquilina*, *Rubus parviflorus*; *Ceanothus praestratus*, wonderfully close-woven and hugging ground. On Spring Hill (Cont. p. 28)

- Went today into Quincy to see about my car which is in hospital at Neble's garage. I took ^{with me} to mid-day meal at the Hotel Quincy two young fellows from the Forest School Camp at Meadow Valley, Philip N. Joranson, who had his undergraduate work at the Univ. of Chicago, and Geo. Jenkins, a handy man of the School of Forestry. After the meal we went back to the garage to talk to the mechanic who worked on my car. This mechanic had at every step talked to me in the gloomiest manner about the terrible condition of each part of the engine. The whole thing, apparently was to cost in repair about \$135⁰⁰. But when Jenkins got hold of him and gently crowded him inch by inch as to the necessity of each propos-

ed repair, very soon there was a more reasonable view shown and he gave me a figure of \$20⁰⁰ for the repair!

At the midday dinner at the Hotel Quincy was O. M. Evans of the U.S. Forest Service who has now a field crew at work on a timber survey at Willow Creek, south of Milford in Lassen. He gave me a most cordial ^{invitation} to visit his camp and stay as long as I liked.

Quincy is a neat but small town, its good-looking and rather massively distinctive county-seat building being its only important structure. - Cont. from bottom p. 26. trail I note patches of it 20 x 30 feet which are serving as a nursery for *Chimaphila umbellata* (often very abundant over surface of a small colony), *Smilacina*, *Abies concolor*, *Pseudotsuga taxifolia*, *Pinus ponderosa*, *Ceanothus* (Cont. p. 33)

No. 19,329. *Glyceria pauciflora* Presl. 4000 ft.
(det. Beecher - Champton, 8/77)

This grass is perennial by very slender rootstocks. It grows in wet swamps or bogs.

No. 19,330. *Polygonum*

Dry loamy flat. Achenes jet black, dull; black and shining only on the angles. Sepals and petals white, both green-veined. Sepals, ^{the 3 outer} with broad green midvein which is pinnately branched, the branches extending a little into the thin border, some of the branches forked; 2 inner sepals white. scarious with a simple green midrib. Three inner sepals strongly carinate over the angles of the achene; 2 inner sepals plane. Stamens 5.

No. 19,331. *Deschampsia elongata* (Hook.) Munro ex Benth.
(det. Beecher Champton, 8/77)

Inflated grass in dry flat.
No. 19,332. *Mimulus moschatatus* Dougl.
Cor. yellow. Moist flat.

- ✓ No. 19, 333. *Polygonum*
Stems leafy to top. Two
sides of leaf alike; the lower
side lighter in no. 19, 330.

- ✓ No. 19, 334. *Cerastium vulgatum* L.
Moist flat.

- ✓ No. 19, 335. *Epibobium*
Moist flat. Cor. white.

Perennial by marked winter bulb-
lets formed as offsets at base of stem.

- ✓ No. 19, 336. *Gnaphalium*
Cor. small, aging

brick-red. Dry flat.

- ✓ No. 19, 337. *Cryptantha torreyana*
Greene. Dry flat

- ✓ No. 19, 338. *Barum*

Cor. white. Each fall the
single stem dies back to the tuber,
and the plant is perennial by the
tuber. The next spring a new
tuber is formed alongside the old tuber
and develops a leafy shoot, thus

exhausting the old tuber. The leafy
shoot enables the tuber to grow to full
size and finally to develop or extend
the stem which becomes a flower-
ing stem. As the flowers and fruits
develop the leaves are exhausted and
dry up. The production of a new
tuber each season may cause the
tuber to lie too near the surface
of the ground. The next tuber
may then be "deep-seated" and
thus of a different shape from
the others. Moist flats.

- ✓ No. 19, 339. *Gilia leptalea* (Gray) Greene
ssp. *leptalea*

Cor. light purple. Dry flat.

- ✓ No. 19, 340. *Asclepias speciosa*

Dry flat, forming a colony
by underground rootstocks. Note a
folder of sterile shoots. These
shoots arise from a root bud and
this new vegetative point is probably 2
or 3 years old. Note the small narrow
leaves.

- ✓ No. 19, 340a *Gnaphalium*

My camp here in Meadow Valley is at Professor E. Fritz's tent, about 500 yards from the forest school buildings in the University forest.

The days are delightful; the mornings are like a painted picture: the quiet air; the impressively tall firs and pines standing motionless in all their beauty; the invigorating atmosphere; the clear stream running by on its rocky bed and its ceaseless but peaceful murmur — all this with the pleasant sunlight and deep blue sky make days of enchantment, days of almost fairy-like oblivion.

— Cont. from p. 19. a narrow gash down to the ground.

— *Verbascum thapsus* L. Meadow Valley, Plumas Co.; Willow Creek, e. Plumas Co.; Oroville.

No. 19,341. *Galium*
dry steep slope in open pine woods.

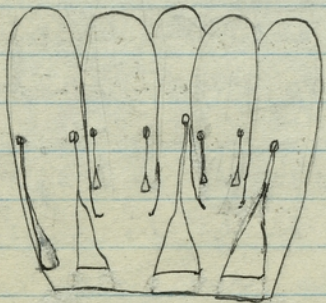
No. 19,342. *Castilleja pinetorum* Fer.
dry steep slope in open pine woods.

— Cont. from bottom p. 28. *integerrimus*, *Prunus emarginata*; *Bastanopsis semperivirens*; *Quercus Kelloggii*; *Pentstemon lemmingii* (at most suffrutescent here); *Quercus chrysolepis*; *Cornus Nuttallii* (it crown-sprouts from root-crownzone frequently seen low bushy plants of it in dense or shady forest; I note a hillslope bush 2½ to 3 ft. high and 4 ft. broad, many-stemmed from the base).

* Cont. from p. 168, no. 19,712.

This is much more glandular than my own colls. from Providence Mts. (nos. 18,232, 18,209, etc.) which seem to represent the extreme phase of this biotype.

✓ No. 19,343. Polygonum.

In meadow near lower camp of Forest School.
dry

Perianth: 3 outer segments with broad green midvein (and lateral veins!!), markedly ciliate; 2 inner segments set, as it were, on the short tube of the outer segments, white-scarious with narrow green midvein. Stamens 8, four of them with deltoid-dilated lower half to filaments and set low on perianth-tube; four much smaller and shorter stamens and only slightly dilated at base, set on inner ^{perianth segments} _{again}. I now dissect another flower and get 8 stamens, 4 with strongly dilated

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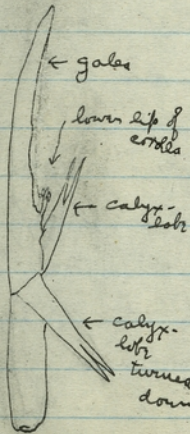
bases, 4 smaller and shorter set higher, the outer per.-segments with shortly pinnate-branched broad green mid-nerve; also inner segments pinnate-branched mid-nerve. Another flower with 8 stamens. Achenes deeply or strongly trigonous, smooth and shining!

- Coll. from p. 33, no. 19,342.

Bracts scarlet on upper half. Calyxes with slender lobes left above, the left portion scarlet.

Lower lip of corolla well above sinus opening of lower side of calyx. Calyx split more deeply behind than before.

This plant is a tufted plant with many



erect or ascending stems from the root-crown. Its herbage is darkish and glandular. Its flower clusters are much smaller than those in no. 19, 315 and the habit of 19, 315 is entirely different.

— Whenever in camp in the field, I have a few books by me in case of unexpected delays or waits. Dr. Barn gave me for personal a copy of Shirley's Letters. which was devoured at two or three sittings. Louise Amelia Knapp Smith wrote these letters from Rich Bar, near here, on the East Branch North Fork Feather River. Her account of mining camps is extremely vivid and faithful. She records all she saw and experienced, the agreeable and the disagreeable, the good and the bad impartially but with intense sympathy and largeness of mind in her attitude. She is a maker of fine phrases: the fathomless splen-

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dom of the California sky. She is soon saying (this in 1851-52) "Ours California." She loves the new land and believes in it.

I am now taking matches at John Gunther's Inside Europe when resting in this wondrously beautiful camp. This book is the property of Philip Joranson, in camp with me. I have also the Five Dialogues of Plato, and John Stuart Mill's Essays on Liberty and much also about nothing. No. 19, 344. *Gayophytum*

Petals pinkish, 2 mm. long. 4 longer stamens slightly but distinctly dilated upwards, that is very slenderly clavate. Calyx-lobes closely reflexed in pairs. Dry flat.

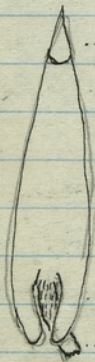
No. 19, 345. *Madia gracilis* (Smith) Keck
Rays 5; disk-fls. 3. Rays short, 3-cleft at apex. Dry flat.

No. 19, 346. *Euphorbia*
Glands 4, yellowish, narrowly white-

margined.

No. 19, 347. *Apocynum*

Forest floor, near University camp.



Cov. whitish with pinkish lobe, a short pink stripe beneath each sinus.

Cov. lobe recurved, narrowly white-margined. Cov. with slight constriction ^{at or} about at middle; on withering the portion above constriction is minutely wrinkled or roughened, the part below remains smooth. I see no difference between flowers of this and #19, 313. There is in the forest here a

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plant bearing only a fl. or two, or often no flowers at all. In habit it is spreading, much like #19, 347 which spreads a little.

- *Pteraspora andromeda* Nutt.

- *Populus trichocarpa* . Five lines of trees along streams on borders of open meadows, the only conspicuous broad-leaved species in the landscape.

- *Arctostaphylos patula* Greene.

no. 19, 348. *Trifolium breweri* Wats.
Dry open pine wood flats.

no. 19, 349. *Silene californica*
Petals deep red, 4-cleft, the 2 lateral lobes small, short, slender, the central lobes truncatish at tip, often eroseulate or notched. Rocky slopes. Same petal pattern as that previously collected (no. 19, 292).

No. 19,350. *Eriogonum viminalis*
Loose rock pile. Stems slender
cylindric, almost truncate at apex,
the teeth low-rounded. Perianth
pinkish, aging whitish; segments
with pinkish or green midrib.

No. 19,351. *Rhamnus* ^{*californica* Esch.} ~~*parvifolia*~~
ob. var. monaeifolia (Greene) Jepson.
Shrub with many erect stems from
base, forming a clump 14 ft. h.;
leaves rounded at base, dry flat.

No. 19,352. *Agoseris grandiflora*
dry meadow; back of village.

No. 19,353. *Collomia grandiflora*
Dougl. Cor. pale salmon yellow.

No. 19,354. *Elymus glaucus* Buckl. var. *jepsoni* Davy
(det. Becher Crampton, 8/77)

This grass in margin of forest
in dry flat. Glumes subequal, 3-nerved,
membranous-margined. Lemmas not
obviously nerved, tapering into an
awn $1\frac{1}{2}$ times as long. Palea
with 2 lateral nerves, awnless.
Two spikelets side-by-side at each

node. Spikelets 2 or 3-flowered.

— *Lepidium*
Growing with no. 19,352. (No. 19,471.
520 p. 74.)

No. 19,355. *Minulus torreyi* Gray.

Cor. crimson, its lobes
of same shape and size but the
2 upper turned backward, the 3
lower spreading, in this way
bilabiate. All the lobes transversely
oblong. Palate with 2 yellow ^{parallel} folds
running down into throat, the
folds ^{divergent or} spreading a little at apex.
Calyx-teeth subequal. Anthers united
or rather connivent in pairs, the filament
attached at apex of the pair of cells, the
cells turned upward, dehiscing thus on
upper side. Lower pair of filaments
the longer, all glabrous or slightly
pubescent on one side at base. Calyx a
little oblique at mouth, the upper teeth
the longer. Stigmas broad transversely,
a little united at sides and thus shallowly
bowl-shaped. Open forest, moist loam.

✓ No. 19, 356. *Taraxacum vulgare*
Forming colonies in uncultivated fields. Also in Meadow Valley.
Receptacle rounded-conical, not chaffy. Heads rayless.

✓ No. 19, 357. *Phacelia virgata* Greene.
Brushy slope. No! = *P. griseophylla* (Gray)

✓ No. 19, 358. *Symphoricarpos*.
Corolla white, lower half pink. Corolla large.

✓ No. 19, 359.
One individual only of this umbellifer.

✓ No. 19, 360. *Cirsium*
A colony of this Canadian thistle on a flat.

✓ No. 19, 361. *Cirsium vulgare*
This Bull Thistle is frequent.

- *Artemisia tridentata*. A little of this near Quincy.

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Meadow Valley, Plumas Co.

No. 19, 362. *Apocynum*
Cor. pinkish, the pink line beneath sinus very faint. Corolla aging white.

✓ No. 19, 363. *Graptophyllum palustre*
Graptoloid. Rich half open flat in forest.

No. 19, 364. *Plantago*
In some meadows forming 40 to 60 per cent of the corn population.

✓ No. 19, 365. *Crepis capillaris*
Meadow, wet.

✓ No. 19, 366. *Solidago*
Moist meadow.

✓ No. 19, 367. *Lagophylla ramissima* Nutt.
Dry flat, Quincy, Fowards Spring Garden.

- On the Spanish Peak trip (see p. 13),
Prof. Fray looked at my collecting methods with a great deal of interest: the careful selection (Cont. p. 45)

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No. 19,368. *Lupinus*

Cor. lavender; upper half
of keel villous. Upper calyx-lip
minutely notched; the notch obvious
on account of hairiness. Lower
calyx-lip minutely 3-toothed.

Dry sandy flat.

No. 19,369. *Aster*

Rays lavender. Dry flat.

No. 19,370. *Chrysothamnus* ^{*viscidiflorus*}

(Hook.) Nutt. Dry open or semi-open hills.

- *Artemisia tridentata*

It comes in (I am traveling
easterly) along the Feather River
at Blairden. It is a dominant on
the hills by Beckwith. Thence
northerly it is the predominant
vegetation on the flats and low
hills as far north as Willow Creek
and northwards. It does not form a
closed cover, but makes a 25 to
50 per cent cover. Here in this

region the Sierran forest is abutting
on the Great Basin desert and the
thin stand of conifers often arises
from a gray "ward" of *Artemisia*
tridentata.

Willow Creek, Plumas Co., Aug. 11, '39.- *Pinus jeffreyi*- *Populus tremuloides*- *Pinus ponderosa*

- Cont. from p. 43. of material,
the attempts to secure parts repre-
sentative of the life-history, the
preparation of material so as to
make the best possible display in
the folder, the careful taking of
notes, analysis of details, sketches
or diagrams in the field book to
illustrate or explain points of
structure, description of habit
and often lists of associated species
- all this and much more was
noted by Professor Britz (Cont. p. 58)

— Here at the Timber Survey Camp of the U. S. Forest Service, I am the guest of O. M. Evans, Forester. The camp site is a very pleasant one along the banks of Willow Creek. The very openly wooded slope (Jeffrey Pine) rises only moderately, in a gentle incline. At the foot of the slope, near the creek is a most wonderful spring of clear cold water. The field crew, engaged on timber survey of the region, numbers about seventeen. The mess tent, with a long table and benches, is bountifully loaded with food. At supper, the evening I arrived, there was roast lamb and also an excellent meat loaf of same kind, spinach, carrots, white potatoes, sweet potatoes, stewed plums, a fruit pie, a pump. Kin pie, rolls, butter, coffee and tea, cream, and other things

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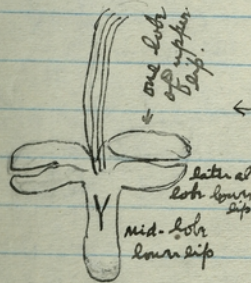
which I overlooked. At breakfast the next morning there was dry cereal, fried eggs, bacon, hot cakes, bread, tea, coffee, butter, marmalade, jam, stewed apricots. Also at dinner last night there was marmalade, plum jam and apple jelly. I should say the ^{field} crew lives extremely well. For [↑]luncheon there was, in addition to meat- and jam-sandwiches, oranges. The place, on the very rim of the western margin of the Great Basin, is quite free from mosquitoes and other insects. Mrs. Beets is the tip-top cook.

— Black Mt., see p. 52, is right on the axis of the Sierra Nevada, the dividing ridge, as to drainage, against the Great Basin. Since it is not marked on the Forest Service map (Plumas Forest), it may possibly be in Lassen Co., instead of Plumas Co., as marked p. 52. It may be on the boundary line.

- ✓ No. 19, 371. *Quercus Kelloggii* Newb.
large trees. Milford
- ✓ No. 19, 372. *Rosa*
Bushes 10 to 20 in. h., but probably
subject to some browsing.
- ✓ No. 19, 373. *Madia elegans* Don ex Griseb.
- ✓ No. 19, 374. *Mimulus*
- ✓ No. 19, 375. *Lupinus*
Sandy flats. Cont. p. 51.
- ✓ No. 19, 376. *Polygonum convolvulus* L.
det. Richard S. 10/24/63 Mitchell
Stems trailing and climbing.
- ✓ No. 19, 377. *Polygonum lapathifolium* L.
- ✓ No. 19, 378. *Epilobium*
- ✓ No. 19, 379. *Ambrosia franseria*
acanthicarpa (Hook.) Cov.
dry sandy flats; annual.
- ✓ No. 19, 380. *Ambrosia franseria*
acanthicarpa (Hook.) Cov.

- ✓ No. 19, 381. *Poa scabrella* (Thurb.) Benth. ex Vasey
(det. Seacher, Grampson, 8/27)
5500 ft.
This grass forms a dense heavy
sod with the leafy bases and stem bases.
It grows on very dry flats and tends
to form "fairy rings".
- ✓ No. 19, 382. *Penstemon leucostus* Dougl.
Rocky spot in ^{dry} flat. Flower-
ing stems from a branched woody
root-crown. The short ^{widely} branches of the
root-crown give rise terminally to a
(Cont. p. 50)
at *
- * See p. 54

Trichostema oblongum Bth. no. 19, 396.



← Diagram of flower:

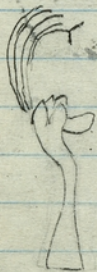
lobes of upper lip
and lateral lobes
of lower lip equal,
same size, shape
and color.

Lobes of upper lip
and lateral lobes of
lower lip turned right
and left and approxi-
mate in pairs by
their tips. Cleft between
lobes of upper lip
deeper than cleft between
upper and lower lip!

Cont. over

Corolla larvander; middle lobe lower
lip with a coriaceous upturned tip and
a purple Y-shaped spot below mid-
dle. See diagram, p. 49.

Cor.-lobes hirsute-spreading on
back! Calyx-lobes linear, rather
densely spreading hirsute,



Corolla from
the side.

Lower lip, middle
lobe subtruncatisht
at apex, not callus-
marginated at apex
(observation on previous
page, due to drying)
purple-spotted on
palate (not Y-
marked in this
example)

* Cont. from p. 49. simple flower-
ing stems (with terminal racemes) of
the season. There are also develop-
ing from the branched rootstock a low
story of short (1 to 3 inch) sterile
shoots, the leaves thickish, salinity
leafy slender-dentate, glabrous, glaucous.

No. 19, 383. *Eriogonum spergulinum*
dry sandy flat. var. *reddingianum*

- *Epilobium*. See p. 54. Cont. no. 19, 400.

Petals obovatisht, dark

pink; pods rather long-pedicelled,
4-sided, 8-ribbed, glabrous or nearly
so; pedicels glandular-puberulent!!

- *Eriogonum*, cont. from p. 52, no. 19, 388.

Perianth yellow; leaves dark green,
thinly-arachnoid but soon glabrate.
Involucre densely woolly inside fil-
aments densely villous on lower
half.

- *Lupinus*. Cont. from p. 46 (no. 19, 375). The
initial axil shoot is short and terminated by a
short raceme (see spm.) which flowers early
and fruits before the later lateral shoots
arise from the lower axils (proliferously) and
develop their very long racemes.

- No. 19, 384a. *Aster Chrysanthamnus*
parryi var. *nevadensis*
(Gray) Taken by Knowler Ryerson
Jepson. No. 19, 384b. *Macraera anthera canescens* (Pursh)
aff. *Haplopappus* Gray
No. 19, 385. (*Chrysanthamnus*) Greenei
(3 or 2), Gray
Rays few, yellow.

- No. 19, 386. *viscidiflorus* (Hook.)
Chrysanthamnus Nutt.

Rays none. Leaves green, glabrous
sur the ciliate margin, glandular.
Invol. 4 or 5-flowered, its
bracts with yellowish tips, Cor.
yellow. Leaves 3-nerved (parallel)
nerves

- No. 19, 387. *Chrysanthamnus* *nauseosus* var.
spectosus (Nutt.) Hall

Corollas yellow, the throat
about as long as tube. Pappus $\frac{3}{4}$
as long as corolla. Styles long-
exserted. Rays none.

- No. 19, 387a. *Eriogonum umbellatum*
var. *insectum* See note p. 51. Leaves
coriaceous.

- No. 19, 388. *Chrysanthamnus*
Rays none.

- No. 19, 389. *Sitanion hystrix* (Nutt.) J.C. Smith
(det. Beecher Crampton, 8/77)
This grass on a dry flat

- No. 19, 390. *Navarretia intertexta* Hook.
Brand.
var. *propinqua* Small flat cushions in
dry sand in bed of streamlet.
Cor. white.

- No. 19, 391. *Muhlenbergia filiformis* (Thurb.) Rydb.
(det. Beecher Crampton, 8/77)

This grass in isolated heavy
stools in dry bed of sandy streamlet.

- No. 19, 392. *Agrostis exarata* Trin.
(det. Beecher Crampton, 8/77)

This grass in stools in dry
sand.

- No. 19, 393. *Aster*

Rays lavender, dry flat.

- No. 19, 394. *Eriogonum vimineum*

Perianth white, the brown
midnerve stopping short of apex
of perianth-segments. Filaments
glabrous.

- No. 19, 395. *Boissduvalia densiflora* (Lindl.)
S. Wats.

Petals crimson, shallowly but
sharply notched. Flat.
No. 19, 395a. *Boissduvalia stricta* (A. Gray) Greene

- No. 19, 396. *Trichostemma oblongum*
Berth. Dry flat. See note on p. 49
at *.
- No. 19, 397. *Alopecurus aequalis* Sobol.
(Det. Beecher Crampton, 8/77)
This grass in heavy stools,
the culms geniculate!! Dark green
leaves, densely caespitose.
- No. 19, 398. *Agrostis alba* L.
(Det. Beecher Crampton, 8/77)
Perennial grass.
- No. 19, 399. *Sanguisorba occidentalis* Nutt.
Dry flat. Perennial!
- No. 19, 400. *Epilobium*
Dry flat. See note
on p. 51 at *.
- No. 19, 401. *Deschampsia caespitosa* (L.) Beauv.
(Det. Beecher Crampton, 8/77)
Grass with heavy stools.
- No. 19, 402. *Deschampsia elongata* (Hook.) Munro ex Benth.
(Det. Beecher Crampton, 8/77)
Grass with filiform tufted
leaves.
- No. 19, 403. *Rorippa curvisiliqua* (Hook.)
Bessey
Moist sandy flat.
- No. 19, 404. *Polygonum kelloggii* Greene
Dry flat.

- No. 19, 405. *Linanthus barknessii* Greene.
Dry sandy flat.
- No. 19, 406. ~~*Polygonum*~~ *Alopecurus aequalis* Sobol.
(Det. Beecher Crampton, 8/77)
This grass in heavy stools.
Dry sandy flat.
- No. 19, 407. *Polygonum*
Cor. pink. Stamens 8; 4
inserted low on per. tube, deltoid-
dilated bases; 4 inserted higher with
slender filaments. Ovary red.
(Only slightly dilated downwards).
- Rowland Creek, branch of Last Chance
Creek, Plumas Co., Aug. 12, 1939.

No. 19, 408. *Carex*

No. 19, 409. *Sidalcea*

Cor. pink. ♀ plants.

No. 19, 410. *Nicotiana*

Dry sandy flat. Cor. greenish-
white. Dixie Valley, sv. Lassen Co.

Itinerary for p. 49-55. We left the Forest Service Camp on Willow Creek in a Forest Service truck. Mr. O.M. Evans, forester, led the party. We drove down Willow Creek and stopped on a flat ^{on East Chance Creek} where rock outcrops showed interesting Indian pictographs. Here I collected nos. 19,381-19,383. We went ^{on} and drove by a very good mountain grade (dirt road) to the summit of Black Mountain and inspected the lookout station. ^{see p. 261 at **} Returning to our road, below in the valley, we ran along East Chance Creek and stopped and worked the flat near a point where Harris Creek enters East Chance. Here we collected nos. 19,389-19,406. Went on to the Meadow View Jang Station where we had luncheon which we brought with us. Went

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on, left the road and drove across the flats westerly to Rowland Creek where we inspected two beaver dams. This engineering feat by animals was well worth seeing. Burton saw one of the beavers in the pond beneath the water. Here we collected nos. 19,407 and 19,408. Returned to road, passed the almost imperceptible divide on valley floor between headwaters of East Chance Creek and Little East Chance Creek. Went on. Dixie Peak, a high broken mass rises westerly. We circled it southerly and came into Dixie Valley on its west side where I collected no. 19,409. We soon strike the road from Beckwith and return by the pass to the camp on Willow Creek. In the party: O.M. Evans, Kunwar Ryerson and Griffin from Davis, Robert Burton (of Santa Cruz High School) and myself.

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- ✓ No. 19,411. *Castanopsis chrysophylla*
var. *sempervirens* (Kell.). Coll. by
R. A. Burton.

- *Wyethia*. Abundant at
Willow Creek. Collected seed (no. 21,213)

[Cont. from p. 45. and he said: "On
one of my trips to the summer
school Dean E. D. Merrill was along.
He collected plants. He grabbed a
plant here, broke off a branch
there and slapped them off-hand
into a press. He used no such care
as you use". For me there is no
object in just collecting plants. I study
plants in the field, write them up fully,
taking twice or thrice the [Cont. p. 76]

[Cont. from p. 64. *Portula*. My collecting
was done on the terrace-banks of
the Feather River within the town limits.
The town is scattered and so there is
considerable open space, wild land. Being
within the town limits there is no cattle
grazing, as most everywhere else in
the mountains.]

6000 ft.

1939

- ✓ No. 19,412. *Carex*

The hypogaeous base of the
stem hairy sheathed with old leaf
bases runs down about 4 to 6 inches
and then passes into a cord-like
stout rootstock which apparently
strikes deeply downward. This is
a dominant in the now dry low
meadows along the stream, - (now dry,
but formerly (in the spring) wet. Cont.
p. 61.

- ✓ No. 19,413. *Poa nevadensis* Vasey ex Scribn.
(det. Becker Crampton, 8/77)

This grass, on the dry
bottom flats, forms extremely dense
heavy tussocks that stand a little
above the general level of the floor
of the flat. It is in reality a
dense sod in little circles with the
loose soil eroded from around
the circle. Cont. p. 61.

- ✓ No. 19,414. *Carex*

Rootstock slender. In dry
formerly marshy meadow.

✓ No. 19,415. *Salix*

Silver-leaved willow. 12 to 15 ft. h. Slims from the base

slender, 20 to 60 about, forming a bushy clump. Meadow bottom of Willow Creek.

✓ No. 19,416. *Salix*

Green-leaf willow, 12 to 15 ft. h. Slims from the base slender, 20 to 60 about, forming a bushy clump. Meadow bottom of Willow Creek. These two species of willow, nos. 19,416 and 19,415 are associated.

✓ No. 19,417. *Carex*

In moist mdw. by stream.

✓ No. 19,418. *Deschampsia caespitosa* (L.) Beauv.
(det. Becker, Crampton, 8/77)

This grass in moist mdw. Leaves mostly in a basal tuft, straightly (as if rigidly) divaricate (spreading-ascending).

✓ No. 19,419. *Scirpus*

Moist stream border.

✓ No. 19,420. *Juncus ensifolius* Wikstr.

Stream border.

✓ No. 19,421. *Agrostis exarata* Trin.

(det. Becker, Crampton, 8/77)

This grass in wet stream border.

✓ No. 19,422. *Artemisia tridentata*

In open pine forest. 1½ to 3 ft. h. A species dominant over a very wide area, yet invariable - constant in aspect and character. - Cont. *Carex* no. 19,412. Achene lenticular; perigynium with 5 nerves on lower side, 5 to 7 on upper side, in neither case counting marginal nerve. Stigmas 2.

This fills many of the low formerly wet meadows - but the sheep (cropping close everything else) leave this alone or crop it sparingly.

- Cont. no. 19,413. These closely cropped bunches are like little circular islands rising from the dusty

level of the flat.

No. 19,423. *Wyethia mollis* Gray
This is often a dominant
on the ^{open} flats or a codominant with
Artemisia tridentata; it is also a
very abundant plant in the open
pine forests. Dixie Valley.

No. 19,414. *Madia glomerata* Hook.

Involucres densely covered
with shining globular glands, mostly
with one exserted corolla, sometimes
2, rarely 3. Corolla yellow, discoid,
 $\frac{1}{2}$ line broad. No rays noticed.

Open flat, forming a marked
colony in dry ground - colony pure.

No. 19,425. *Artemisia tridentata* Nutt.

Dixie Valley. Abundant all over region.

No. 19,426. *Eriogonum vimineum*

Per. pink. Sandy flat, mostly
common, here and there, in colonies.
Beckwith.

No. 19,427. *Eschscholzia californica*
Cham.
Beckwith. Cor. pale yellow outside.

superior - yellow inside. Open flats.
No. 19,428. *Epilobium*

Beckwith. Cor. pink. Sandy flats.

No. 19,429. *Agrostis exarata* Trin.
(det. Beecher Crampton, 8/77)

This grass on open flats.

Portola.

No. 19,430.

Rays yellow, 4 to 7. Portola.
Sandy flats.

No. 19,431. *Erigeron divergens* T & G.

Portola. Rays blue. Sandy flats.

No. 19,432. *Potentilla*

Petals white, suborbicular, obtuse.

Sandy open flats. Portola.

No. 19,433. *Aster*

Portola. Small colonies. Rays lavender.

No. 19,434. *Carex*

Dry flat. Portola

No. 19,435. *Artemisia douglasiana* Bess.

Portola. Heavy clump of simple or
subsimple stems, the stem in this
spec. cut off 4 in. above ground.

- No. 19,436. *Antennaria douglasiana* Bess.
dry flat; rare. Portola.
No. 19,437. *Poa patustri* L.
(det. Beecher-Crampton, 8/77)
This grass has slender
rootstocks. Portola.

- No. 19,438. *Carex*
dry flat. Portola.

- No. 19,439. *Carex*
Extremely dense heavy rather
tall clumps on river bank. Portola.

- No. 19,440. *Madia glomerata* Hook.
Delicate. Low dry flat; colony.

- No. 19,441. *Chrysothamnus* ^{nauseosus} var.
speciosus
(Mutt.) Hall 15 to 30 in. h. Dense
rounded bushes. Very floriferous. The
most common, the only common
Chrysothamnus in the region.

- No. 19,442. *Eriogonum elatum*
This is the common form

through all this region, and
down as far as Meadow Valley
and perhaps below. Spms. seldom
show as good basal leaves as
this. In the colony, growing on

- a steep dirt slide, only a few in-
dividuals. Had retained their basal
leaves. Near Jackson Creek, Middle Fork Feather
River. No. 19,443. *Aster*.

- Greenhorn Creek near
Quincy. Wet flat.

- No. 19,444. *Nepeta cataria* L.

- Greenhorn Creek near
Quincy. Wet flat.

- No. 19,445. *Achillea* ^{borealis californica} *millefolium*
Wet flat Greenhorn Creek, near Quincy.

- No. 19,446. *Epilobium latifolium* L.
Wet flat. Greenhorn Creek

- near Quincy.
No. 19,447. *Phleum pratense* L.
(det. Beecher-Crampton, 8/77)

- This grass is perennial; not
fleshy bulblets produced at base.
Greenhorn Creek, near Quincy.

- No. 19,448. *Sambucus*

Berries black, but extremely
glaucous or blue glaucous.
Shrubs 9 to 12 feet high. Spanish
Peak, lower slopes south.

No. 19,449.

See p. 67. This Scrophulariaceous
plant grows in a bit of wild
woodland, but within 300 yds.

say, of a roadside station on
opposite side of road. Bucks Valley.

No. 19,450. *Agrostis diegoensis* Vasey

(det. Beecher-Crampton, 8/77)

Perennial grass, in heavy
stool. Woods. Bucks Valley

No. 19,451. *Erigeron peregrinus* (Pursh)
Greene ssp. callianthemus (Greene) Cronq.
Bucks Valley, woods.

No. 19,452. *Kelloggia*

Bucks Valley.

No. 19,453. *Stipa californica* Merr. & Davy
(det. Beecher-Crampton, 8/77)

This grass in open in forest,
Lupine association, perennial, in
stools. Mountain west of Bucks Valley,
near Soapstone Hill.

- *Lithocarpus densiflora* Rehd.*Arbutus menziesii* Pursh.

Return Brush Creek and Berry

Creek, Butte Co.

No. 19,454. *Centaurium*

Ruin bottom, Feather River, near

Oroville. See p. 74.

No. 19,455. *Potentilla*

With no. 19,454. See p. 73. Petals

so much smaller than calyx-
lobes as to escape notice.

No. 19,456. *Setaria glauca* (L.) P. Beauv. [*S. lutescens*]
(det. Beecher-Crampton, 8/77)

This grass perennial; bulbous
dilations at base.

No. 19,457. *Ludwigia palustris* (L.) Ell.

This sizaceous plant pro-
strate. See p. 71.

- Scrophulariaceae. Cont. no. 19,449.

Cor. deeply 2-lipped: lower lip transverse,
broadly orbicular; its palate with 2

(oblong or narrow sub-

ridges or folds with a deep furrow
or trough between; upper lip

strongly curved-galeate, the

galea prolonged into a slender

(if I may call the upper
lip such) broad and
keel-like below,

or cord-like structure above, which is
curved towards and touches the central

notch of lower lip. Style simple; stigma small ^{teeth} capitate. Stamens 4; anthers versatile; anther-cells separate and ovate below; filaments inserted on middle of corolla-tube, the upper pair glabrous, the lower pair hairy. Calyx strongly obliquely cleft, the sinus on lower side the deeper, the upper side with 2 teeth. Capsule strongly laterally compressed and somewhat gladiate at apex, glab., 2-celled, the cells anterior and posterior, several to many-seeded. The upper lip wonderfully like a lupine keel.

— *Abutilon* (Cont. no. 19, 468).

Cor. small, saffron-yellow. Fls. solitary, without bractlets. Style 10, 12. Oules 3 in each carpel. Petals 4 to 5 lines long. Anthers borne at summit or apex of filaments, the filaments united into a sheath below. No involucre! Capsule dehiscing down the back of the carpel.

✓ No. 19, 458. *Oenothera hookeri* T. & G.
River bottom, Feather River near Oroville. See p. 71.

— *Sanilax californica* Gray. See 19, 471.
River bottom.

✓ No. 19, 459. *Mollugo verticillata* L.
With no. 19, 458. Common.

✓ No. 19, 460. *Lycopus americanus*
Muhl. With no. 19, 458. See p. 72.

✓ No. 19, 461. *Panicum capillare* L.
(det. Beecher Crampton. 8/1/77)
This grass with no. 19, 458.

(19, 470.)

— *Physalis lanceifolia* Nees. (Cont. no.)
Cor. dull whitish, 2 1/2 lines long, limb about 2 1/2 lines broad.
Anthers blue (not purple) or bluish.
Stamens inserted near base of corolla. Calyx in anthesis, flat at base (as if truncatish). Stamens slightly shorter than corolla, distinct. Ovary and style glabrous. Stigma slightly 2-lobed. Anthers ¹innate. Calyx-teeth triangular, much shorter than the tube;

✓ No. 19, 462. *Cyperus*
With no. 19, 458.

No. 19,463. *Hypericum*Prostrate or nearly
so. Feather River bottom near
Oroville. See below.No. 19,464. *Echinochloa muricata* (Michx.)
(Det. Beecher Crampton, 8/77) Fernald

This grass with no. 19,463.

No. 19,465. *Eragrostis diffusa* Buckl.

(Det. Beecher Crampton, 8/77)

This grass with no. 19,463.

No. 19,466. *Gnaphalium*

with no. 19,463.

No. 19,467. *Echinochloa crusgalli* (L.) Beauv.

(Det. Beecher Crampton, 8/77)

This grass with no. 19,463.

— *Heterotheca grandiflora* Nutt. Near Oro-
ville.— *Hypericum* (Cont. no. 19,463).

Cov. small, yellow; in age the upper
portion of petals reflex closely on
the inside of the lower $\frac{3}{5}$, making
a sort of hood in a way. Stamens
about 20, their filaments united
distinctly at base by a very
narrow ring, perhaps somewhat
disposed in sets of 5, but apparently
also scattered.

No. 19,468. *Abutilon theophrasti* Medic.See p. 68. Borders of wet field,
near Robbins sta., S. Sutter Co.No. 19,469. *Polygonum lapathifolium* L.

Stem simple, erect; annual.

(Stem axis unbranched below terminal
infl.!). With no. 19,468 in borders

of wet field. Cor. white, extremely small.

* Perianth rather.

— *Nicotiana glauca* Near Oroville.— *Centaurea aestivale* L. " " "— *Oenothera* (Cont. no. 19,458) *hookeri*.

Stigmas⁴, arising from an annular "plat-
form", abruptly enlarged at summit of style.
Annular platform narrow, not very thick, not
distinct.

— *Ludwigia palustris*
— ~~*Stygocera*~~ (Cont. no. 19,457).

Calyx-lobes ovate, acute. Stamens 4,
short, app. the calyx-lobes; anthers
versatile. Style single, short, the
stigma capitate. Ovary inferior, 4-celled,
seeds many. Leaves 4 to 6 lines long,
ovate or obovate, drawn down at base
to a short petiole or subsessile.
Leaves opposite ^{↑ winged}. Fls. solitary and
sessile in the axils. Prostrate or de-

cumbent. Better say of leaves: cuneately sessile or subsessile at base. Flowers 1 line long. — My first impression this was annual — but on spreading out the rootstocks in the folder to put in press it seems to be undoubtedly perennial, as evidenced by old or last year rootstocks.

No. 19,470. *Physalis lanceifolia* Nees.
See p. 69. Wet field, borders, annual.

— *Lychnis* (Cont. no. 19,460).

Cor. white, its apparently 4 lobes subequal, namely: middle lobe of lower lip quadrate, purple-dotted; lateral lobes broadly oblong, spreading laterally, a little smaller than middle lobe; upper lip erect, minutely notched, the effect thus being of a 4-lobed nearly regular corolla. Lower pair of stamens fertile, inserted in throat below sinus on either side of

middle lobe lower lip. Upper pair of stamens inserted in throat, reduced to short sterile filaments. Cor. 1 line long. Calyx lobes subequal, broadly lanceolate, acuminate. Stigmas (2) very unequal, the upper one the longer, that is the posterior lobe; lobe facing or nearest lower lip the shorter, that is, the anterior lobe. Cor.-throat very hairy, especially on lower side.

— *Potentilla* (Cont. no. 19,455).

Stamens 10, short. Bractlets a little shorter than calyx lobes, $\frac{1}{2}$ as wide. Five petals obovate, yellow, $\frac{1}{2}$ line long! therefore very small and easily overlooked in fruiting plants like this where a sufficiently young flower must be used for demonstration.

No. 19,471. *Smilax*. See p. 68.
californica (A. DC.) Gray

74 Clear Lake, Lake Co., Sept. 2, 1939.

— Drove through Knights Valley from St. Helena. In Knights Valley we have on the valley floor in places broad soil-embodied flood-plain gravel fans with boulders in it at least 1 ft. diam. On this part of the floor there is a stand of *Arbutus menziesii*, *Quercus agrifolia*, *Pseudotsuga taxifolia*, *Arctostaphylos uva-ursi*.

We drove into Alexander Valley, thence up the Russian River to Ukiah and Capella; thence east

— *Centaurium* (cont. no. 19, 454).

Cor. - lobes pink (bright), rotate, $2\frac{1}{8}$ lines long, the throat ("eye") white.

No. 19, 471, ^a *Lepidium*
Madon Valley. See p. 41 ante.

Cache Creek bridge, 2 mi. n. of Lower Lake, Lake Co., Sept. 2, 1939.

75

through the *Quercus douglasii* foothills to the summit of the very low pass, ^{in Mayacamas Range} leading over to the Blue Lakes which are very near the summit; thence to Upper Lake; thence along the north shore of Clear Lake, on the flats of which are clusters of very fine trees of *Umbellularia californica*; also a great deal of *Cercis occidentalis*, the shrubs now hanging heavy with burdens of red-brown pods, — like fire spots in their crowns.

No. 19, 472. *Gephalanthus occidentalis* L. Colony on shore line Clear Lake, near Lucerne.

No. 19, 473. *Eriodictyon californicum* Bth. Near Cache Creek bridge, 2 mi. n. of Lower Lake village. This species is mostly in the mountains, recently absent from the foothills save in stream beds or on favored banks.

- where a stream comes out on the valley floor.
 No. 19,474. *Heterotheca grandifolia* Nutt.
 Stems unbranched, 5 to 6 ft. high, a little like telegraph poles, whence the name? Telegraph Plant. Rays 21, 25, 30, 25.
 River bridge nr. of St. Helena.
 No. 19,475. *Nicotiana attenuata* Torr.

River bridge, east of

Saint Helena.

- *Verbascum thapsus* L. Corn Valley.

[Cont. from p. 58. The time for notes that I do for just the physical collecting of the specimens. The specimen is to me nothing in itself - but only as illustrating and validating the notes; as an example of the living plant (at that station)]

- With no. 19,473. See p. 1.
 No. 19,475a. *Antirrhinum virga* Gray. Seeds only. cf. no. 18,912.

Helena, Sept. 12, 1939. Napa Co.

- No. 19,476. *Rhus diversiloba* T. & G.
 This and the two following numbers grew together in a colony in the open woods. They differed in leaf form mainly.

- No. 19,477. *Rhus diversiloba* T. & G.

- No. 19,478. *Rhus diversiloba* T. & G.

- No. 19,479. *Aristolochia californica* Torr. A colony in a shady spot which had been burned - the stems trailing over the ground. York Creek.

- No. 19,480. *Cuscuta*

On *Acer macrophyllum* Pursh. Very luxuriant. Corolla-tube cylindric, its lobes rotate; scales extending half-way up, inserted $\frac{1}{5}$ length of tube above the base. Calyx



cont. no. 19,480.

nearly $\frac{1}{2}$
length of
tube.

No. 19,481. *Gordylanthus*
Colony on dry hillside.

No. 19,482. *Aster*

Rays 25, 24.

Rays lavender. Dry flat, rich soil.

No. 19,483. *Artemisia douglasiana* Bess.

Rich flat. Propagating by stolons.

No. 19,484. ~~*Eryngium*~~ ^{*Composita*} *canadensis*
(L.) Crong.
dry flat.

No. 19,485. *Madia elegans*
dry rich flat; Spring Mtn.,
east side.

- Drove from the Sanitarium across
Napa Valley to York Creek. A York
family still lives on York
Creek. Up York Creek Cañon to
Spring Mountain. The country, and
especially the cañons, well wooded.
On the summit there is a fine
view eastward of the heights of
the Napa Range northward. From
one point Mt. St. Helena bulks
magnificently. Collected on
Spring Mt., east slope nos. 19,476 to
19,485 except nos. 19,481 to
19,484 in a flat a mile west
of summit on west slope.

No. 19,486. *Henizonia lazulaefolia* DC.

Rays white. Rich
flat, Spring Mountain. With 19,484.

Left Berkeley 9⁰⁰ am. Ran to Altamont Pass, thence down the west side of the San Joaquin.

In Stanislaus Co. south of Vernalis and ^{near Halley} before reaching Westley, colonies of *Grindelia* are conspicuous along the unploughed lands in the railroad strip.

No. 19,487. *Grindelia*

Forming thick stools, the tallest stems 6 ft. h., the lowest stems about 2 ft. But mostly it is a tall slender thing. The wide plain on either side the railway track is plowed, has been plowed for many years. *Grindelia* does not persist under the plough. I have no doubt it once covered the entire plain, certainly the areas near the river. As I drive south I continue to see it. Just short

of Newman I turn east on the Livingston road. Over all the lowlands about the river and along the lower Merced ^{Ther} it is abundant and is found in primitive colonies in the fields where there have not been ploughed. Rays, 21, 22, 27.

I drive s. to ^{within} one mile of Newman and turn east, strike the ~~Newman~~ Livingston road, cross the Merced River bridge and go on easterly, turn south towards Stevenson and look up an old schoolmate (primary grade), Wirt Stice, go on east to the main Valley Highway, thence south to Fresno, ^{at Merced} where I stop over night. The next morning I drive east, then north to Clovis. On the way I collect the following:

No. 19, 488. *Helianthus*
Low fields, 3 to 6 ft. h.

Las Palmas sta., s. of Clovis.

At Clovis I take a long road east until striking the Sanger-Adams north-and-south road. I drive north, turn in at the second ranch on the left-hand side. This country, I am now, the lowest rolling country, ^{in, is} right next to the foothills of the Sierra Nevada. ^{There} is the Estelle ranch, the ranch building a quarter mile back from the road, a characteristic ranch of this plain but the small cottage-like ranch house, rather rough, has about it certain features never seen in early days and is set in a small enclosure filled with blooming chrysanthemums and other flowers.

I make inquiry of a woman in the poultry yard. She has a refined manner and speech. Then I drive back on my back one-sixteenth mile and turn west on Herndon ave., a long east-west road running past and ^{just north of} Clovis ^{first} to Herndon on the main valley highway. When I reach the Balfé ranch I turn in through its stone gate and see at once that the orchard, roadways, ranch house and farm buildings were never built with money derived from the ranch itself. It is a millionaire's place. I drive through the orchard to a vineyard and find Dunford Thornton with a band of sheep. (cf. ante 47:446). My talk with him is set down in *Men & Manners*, vol. 12 p. 446, my private journal.

After leaving Thornton (cf. p. 83) I continue to drive west on Hendon av. I stop by a ditch bank which is heavy with grasses and native plants and collect:

✓ No. 19,489. *Setaria geniculata* (Lam.) Beauv.
(det. Beecher-Crampton, 8/77)

This grass forms very heavy stools on a ditch bank—many culms from the root crown.

✓ No. 19,490. *Solidago occidentalis* (Nutt.) Tuck.

Rays 13, 14, 13, 9. Stems erect, mostly solitary from the base, perennial by underground rootstocks. Before this time of the year, during the summer, the plant forms fleshy rootstocks which winter over the plant and give rise to new epigeal shoots the next season. These new rootstocks are now soft and easily broken and I judge must

have been recently formed, that is, this summer, perhaps early in the summer.

✓ No. 19,491. *Sorghum halepense* (L.) Pers.

(det. Beecher-Crampton, 8/77)

This grass, its tall stems topped by its red-brown panicles, is a familiar sight along ditches and margins of fields, everywhere in this region.

✓ No. 19,492. *Artemisia douglasiana* Bess.

Stems several to many from base usually, unbranched below the infl. Lower part of stem, leaves deciduous

— At this point, while botanizing, two men in a good car, well-dressed, stop and inquire if I am in trouble, refer to my car. One remark leads to another and I discover that one, Chet Brown, knows well my nature-loving friend, Dr. J. H. Stark of Oakland. (The two are business men in Fresno). I drive west, cross the Fresno—

Yosemite road and stop shortly and collect:

✓ No. 19,493. *Eriogonum roseum*
Sandy level. Per. pink.

✓ No. 19,494. *Heterotheca grandiflora* Nutt. The first year, a rosette of leaves is formed; the next year a rosette of leaves on the root-crown with 1 or 2 stems (erect) proliferous from beneath it. See p. 87.

✓ No. 19,495. *Heterotheca*?
Rosettes on ground. Notice the winged bases of the petiole. Associated with preceding.

✓ No. 19,496. *Datura meteloides* DC.
Stems diffusely branched.
Cor. lilac.

- I drive west to Henderson, take the valley highway to Arena sta., drive west through farming country to Newman, thence Tracy, thence Berkeley.

- *Heterotheca grandiflora* Nutt. This is common all through the San Joaquin on the valley floor from Clovis to Merced and west across the valley to Newman. In the general region of Stevenson strips along the roadway would be densely colonized with its tall stems. At every place it gave, in some ways, distinctly the suggestion that it may well have been introduced from the southward in recent years.

- Ira W. Clotey of South Pasadena is a new and very able collector of good-looking plant specimens with excellent printed labels who has attracted my notice more recently. I had thought of him as a young man, but when he called on Wednesday,

Dec. 13, he told me ^{he} is 61. He has gray hair and a young face. His training was at Harvard as a mining engineer. His botany he had in a preparatory school under Dr. H. A. Gleason (of New York Bot. Gard.).

— Called this morning Dr. A. M. Carpenter, who as a student decades ago, made Sierran collection for E. L. Greene. cf. notes on the Botanists of Cal. & W. Ind., vol. 2, p. 128, nr.

¶ Called this morning:

Alan A. Beetle
Botany Dept. - U.C.

Working on Scirpus. Has been at the genus three years. Has a master's degree from Harvard (under Prof. Fernald).

Jan. 11, 1940.

— Fred Kline, ^{Berkeley, Jan. 11, '40.} 89
P.O. Box 720

Santa Cruz, Calif.

This man called this morning. An amateur naturalist he brought an amphibian, a large mushroom, two sets of pine cones and other things! He has a great interest in birds.

— Called this afternoon, Jan. 30, '40, John Thomas Howell, California Academy of Sciences. He said Miss A. Eastwood had much stomach trouble, was persuaded by friends to go to the Saint Helena Sanitarium, did so, in three days wrote Howell he must come and take her away from such a place. She next went to a physician in S. F. (whom Howell named). She said: "I shall tell him ^(the doctor) what is the matter with me and

then we will see what he says, whether I am right or not!" Sure enough, the physician agreed with her diagnosis which greatly delighted Miss Eastwood. But he quietly made his own diagnosis and treated her on the basis of his own examination. The results proved extremely satisfactory; Miss Eastwood is now quite well (in her 82nd year) and is working on Lupinus. (She went to the Saint Helena Sanitarium in April, 1939 or thereabouts).

Saint Helena Sanitarium

Feb. 15, 1940

The Buckeye (*Aesculus californica*) is bursting its buds - a few buds in young leaf.

No. 19,497. *Hebe menziesii* H & A, the pale or whitish form. Common in a field just south

of Mount School (N.E. of Yountville, on east side of Napa Valley).

No. 19,498. *Blennosperma californicum* T. & G. This form colonies in a high-lying but wet field. Rays yellow, 13, 8, 9. The disk is greenish-yellow. When the disk corollas open there is exposed the anther-column. The anthers dehisce a white pollen which covers the stigmas with a white covering (white) of pollen. Ray sheaths covered with slender papillae; disk ovaries smooth? Style of ray-fls. deeply cleft. There are some marginal fls. (fertile) without any corolla or ray at all - just the ovary and its style, set between the rays! Their stigmas are linear and wholly different from the capitate stigmas of the disk flowers. About

4 mi. ss. of Yountville (east side road). Cont. below.

✓ No. 19,499. *Montia fontana* L.

With no. 19,498.

✓ No. 19,500. *Arenaria* ^{*californica*} *Brewer.*

In a wet gravelly high spot, associated with *Sedella punila*, and liverworts, and *Montia*. Herbage a little glaucous!

— *Olenosperma californicum* cont. from p. 91. Every other marginal fl. is a rayless flower! The ovaries of the disk-fls. are almost obsolete, reduced to very short pedicel-like structures which might be continued as pedicels, but they are enlarged upward a little and this fact with their position seems to indicate sterile ovaries.

— A telephone call from Dr. Florence Frost, asking when she can see me. As I have an engagement with the dentist which must be kept I decide at once to call on her at the Entomology Laboratory in Agriculture Hall. She has been to South Africa recently and brought back word from my friends the L. H. Clarke. She had an interesting time on the visit and went up to Johannesburg. — Mar. 6, 1940.

— Here in Berkeley this week is Morton E. Beck, Professor of Botany in Willamette University, Salem, Oregon. He is here to consult the herbarium in reference to the flora of Oregon which he is preparing. Inevitably we got around to the work of F. J. Howell. He spoke of Howell's flora in

dispraise, saying there was scarcely a paragraph in which there was not a printer's error. He spoke, too, of Howell's lack of education. I asked: How did Howell travel about Oregon? In what manner? Said Peck: "By rail, stage, any way he could, then walking into the mountains and carrying out huge loads of material on his back. He was very poor and had no facilities, which accounts for the indifferent quality of his specimens. He used a pack mule in the mountains. It is, to be sure, astonishing that he reached such remote spots in the state." I questioned Peck further. I doubt if he knew much about Howell first hand. That a man who was

March 27, 1940.

essentially illiterate, should accomplish so much and actually produce a technical book of 816 pages is truly an achievement. Peck says Greene helped him with his English. This I doubt, save for occasional and limited aid. Greene was too far away - and too busy. Undoubtedly Garman, M. W., helped him a lot, especially in proofreading on his flora.

I took Professor and Mrs. Peck to dinner ^{this March 26} and had Dr. and Mrs. Lincoln Constance join us. They were much pleased with my home on Massewood Road and its slightly situation. - March 27, '40.

Left Berkeley at 9:15, drove through the Livermore Valley to Tracy, thence down the west side, turning across the valley to Livermore and down the main highway to Hamilton, thence east to the Yosemite Turnpike and down it and east to Clovis where I called at Dunford Thornton's. He was not in, but I saw Mrs. Thornton. Thence south to the main highway and on to Bakersfield where I went to the Hotel El Legon. Its lobby was so full of "Shriners" I could not get any ready service and I went to the shabby Hotel Moronet. The room had spotless linen and I slept 8½ hours without waking. The next morning I went over Teahachapi Pass and turned east towards Johannesburg. Be-

2000 ft.

April 17, 1940.

fore leaving Bakersfield a fine breakfast of toast and butter and jelly and bacon and eggs and a glass of milk at the Cafe Saint Francis put me in shape. On the sandy flats near Salt Lake I collect:

No. 19,501. *Careopsis*

Abundant and widely distributed.

No. 19,502. *Langloisia matthewsii* (Gray) Greene. 3 lobes in upper lip, 2 in lower spreading right and left; when one lobe in lower lip, that with median position. Corolla pink with white splotch on undivided portion or central portion of lower lip with crimson arched pattern on its upper portion. Three lobes patterned, that is pattern on lower part of lobes, the fourth lobe if present not patterned generally. Calyx-lobe $\frac{1}{3}$ as long as corolla tube. All cor-

lobes with truncate or truncatish tips with 1, 2 or 3 points. Stamens up; style curved downward. When one lobe in lower lip, that one spreading downward.

No. 19, 503. *Chaenactis*

Heads sometimes pink at first, changing white. Usually white from the first. Cor. pure white.

No. 19, 504. *Cryptantha micrantha* (Torr.) Jtn. This is the borage with the leafy bracts = *Eremocarya micrantha* Greene.

No. 19, 505.

This low yellow-flowered composite is common on the flats.

No. 19, 506. *Monoptilon*

This low white-flowered composite is rare this year. I managed to find only one individual at this collecting point.

No. 19, 507. = *Cryptantha* *Greeneocharis circumscissa* Rydb. This tiny borage is common

Cor. white, minute.

No. 19, 508. *Malacothrix globata*

This showy composite with the spreading-ascending stems has straw-color heads with yellow centers.

No. 19, 509. *Eriogonum gracillimum* Fls. pink.

No. 19, 510. *Eriogonum viridescens* Fls. greenish with burnt under or dark-brown spots.

No. 19, 511. *Eriogonum reniforme* Torr. & Griseb. Fls. yellow.

= *Eremocarya*
No. 19, 512. *Sphaeralcea exilis*

No. 19, 513. *Calyptridium monandrum*.

No. 19, 513a. *Pectocarya* ^{= *P. heterocarpa*} *penicillata* Jtn. ^{A. Nutt.} var.

No. 19, 514. *Salvia columbariae* Bth.

There is no observable difference between this plant of the hot desert sands and the cool moist slopes of the Vaca Mts. so many hundred miles distant.

- ✓ No. 19,515. *Ranchoia matthewsii* (Gray) Greene. Cor. crimson with same color pattern as 19,502 at Saltdale. Stamens curving upward,!! style erect, stigmas 3, short, spreading horizontally.
- ✓ No. 19,516. *Aster abatus* Blake

Rock Aster is not common this year.

- ✓ No. 19,517. *Oxytheca perfoliata* T. & G.

- ✓ No. 19,518. *Hymenoclea salsola* T. & G.

- ✓ No. 19,519. *Gloria antea brevicornu*

- ✓ No. 19,520. *Eriogonum pusillum* T. & G.

Fls. yellow
anthers sulphur.

- ✓ No. 19,521. *Chaenactis*
Cor. pure white!!

- No. 19,522.

yellow Composite

- ✓ No. 19,523. *Astragalus layneae* Greene
Only individual found.

- ✓ No. 19,524. *Cryptantha* *Greeneochloa circumscissa* (H. & A.) Rydb. This borage rare.

— From Saltdale I drove on to Randburg; thence Johannesburg — on to the mining towns of Red Mountain and Atolia, passing the mountain of Red Mountain, a prominent high bulk very red. At Atolia I talk with Thomas Burke, presumably an old-timer in the desert. He advises strongly against going into the Granite Wells country above — says all the way thence to Saratoga spr. is untraveled nowadays and a no-man's land. If anything happened to my machine I

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could get no help and might not be able to walk out for lack of water. I suspect he overdraws the picture a bit from my standpoint. My car - any car - may stall ^{however} and one cannot get the engine started again without aid of a mechanic. So reluctantly I turn towards Olancha. On the summit of the "Summit Range" I "camp" for dinner. Far to the northeast rises high and big and long the Panamint Range dominated by the lofty Telescope Peak. Northwest rises the mighty Sierra Nevada - Olancha Peak and Mt. Whitney. I go on and at night fall I pull out into a creosote bush "grove" ^{or a mess} north of Inyo-Kern and camp for the night.

This road, near which I camp (see p. 102), is a main highway and runs almost straight south across the Mohave Desert to Canyon Pass. There is a lot of heavy truck traffic on it all night long.

- Next morning I go on past Little Lake, a small body of water dammed by a lava flow across the very bottom of the Owens Valley trough, which is here very narrow, past Coso Jet. (west on the railway), past the branch road to Coso Hot Springs in the Coso Range (which rises parallel to my northerly course), to Haines where in the narrow trough for several miles are the Haines reservoirs, to Olancha where I take on gasoline and water and turn easterly across the southern flats of Owens Lake to the pass

between the Casa Range and the
Inyo Range. (see p. 103)

— About $\frac{1}{2}$ mi. north of Little Lake,
I stop and collect:

"No. 19,525.

This low plant with
its yellow rays and golden disks
makes patches of bright color every-
where in opens on the bushy
flats.

"No. 19,526. ~~*Cryptantha circumscissa*~~
~~*Greenochnia racemosa* Rydb.~~

This *Coryphaea* is gre-
garious in tiny colonies in opens of
the sandy mesa.

"No. 19,527. *Astragalus*

Cor. purple. Diffuse

plant, sandy flats.

"No. 19,528. *Sphaeralcea*

Corolla brilliant crimson

"No. 19,529. *Malacothrix glabrata*

Stems decumbent or
ascending from the basal leaf tuft.
The ligules straw-yellow with darker

yellow center to the heads.

No. 19,530. *Oryzopsis hymenoides* (R. & S.)
Ricker

This "rice-grass" is
not abundant here. Little Lake.

"No. 19,531. *Artemisia spinescens* Eat.
and Sage. Low rounded dense bush
nearly 1 ft. h. Heads dioecious? The bracteal
leaves seem to be only once palm-
atifid; the combine ones in some cases
only partially twice-pinnatifid.

Sandy flats. Little Lake.

"No. 19,532. *Lepidium flavum* Torr.

Haines. Very common. Also yellowing
the flats at s. end Owens Lake.
Prostrate.

— The horizontal lava beds crop out
of the slopes of the hills of the near-
by Casa Range and impart a definite
cast to the landscape, about Hai-
nes and elsewhere. Next Olancha
(cf. p. 103) thence across the valley to
the cañon of the pass (top. p. 104) where
I collect the following:

- ✓ No. 19,533. *Hymenoclea salsola* T & G.
 ✓ No. 19,534. *Cryptantha* ^{19534A} No LAH in 1968
 — *Thelypodium* (no. 19,544) with 19,534.
 ✓ No. 19,535. *Cryptantha utahensis*
 (Gray) Greene.
 ✓ No. 19,536. *Gilia hutchinsifolia* Rydb.
~~*serena* Dougl.~~

Cor. very pale lavender, seeming
 in the field as if dull white or almost.
 It dries to a darker hue! Cor.-throat
 narrow. Cañon bottom*
^{large white, intergrade to Gf.}

- ✓ No. 19,537. *Gilia latiflora* Gray, ~~small~~
~~this form~~. Cor. limb crimson; upper part
 of throat blue, lower part yellow, tube
 brown-purple. Cor.-throat broad (cup-
 shaped); stamens exserted from throat.
 Cor.-tube $1\frac{1}{2}$ to 2 times as long as
 calyx.

* Cor. tube lavender, the throat with a
 slight tinge of yellowish color.
 Cor.-tube twice as long as calyx.

- ✓ No. 19,538. *Phacelia crenulata* Torr.
 Cor. blue; white eye.
 ✓ No. 19,539. *Gilia latifolia* Wats.
 Cor. brilliant pink, its lobes
 acute!!; its tube shorter than calyx.
 ✓ No. 19,540. *Phacelia fremontii* Torr.

Cor. lavender blue; throat and
 tube yellow. Stems low in tube.
 In valley after coming out of pass.
 That is, valley at ne. end of Coso
 Range = Centennial Flat.

- ✓ No. 19,541. *Cryptantha* ^{very scant +} too young, ^{discarded.} ¹⁹⁶¹
 Under shelter of low apricot
 bushes, stems reclining, not erect,
 that is not self-supporting.
 With no. 19,540.

- ✓ No. 19,542. *Astragalus*

Stems ascending. With no. 19,540.

- ✓ No. 19,543. *Streptanthus Thelypodium*
 Cor. yellow; petals very small. Leaves
 linear! glaucous! With 19,540.

Valley at nr. end of Coso
Range after the pass from Olancha
No. 19,544. ~~Streptanthus~~ ^{= Centaurea fl.} *Thelypodium*

Petals narrowly-oblongate,

cutish at apex, white-margined at
apex bordering a small purplish area.
Stems, erect, simple, mostly solitary
from a basal rosette of leaves crown-
ing a thickish tap root. This plant
ordinarily might give the impres-
sion of being annual, but I find
on the root crown in some cases
a whitened dead stem of the
previous year in addition to the
living stem of the present season,
and this dead stem shows that
it flowered a year ago; so that
the plant must be perennial!

Rocky mesa, always in the pro-
tection of spiny bushes and stand-
ing erect like a ^{sentinel} above the bush.

A remarkable feature of the flower,
before the petals grow out of the
calyx "tube" or before their tips
appear appreciably, the cluster

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= *Centaurium fl.*, 46 or 81.

of long linear anthers are thrust up-
ward in a closely approximate
cluster, as if a fascis. These greenish-
yellow fascies are a conspicuous feature
of the young raceme, $\frac{2}{3}$ as long as
the calyx. Later the limb of the
petals protrude, short limbs spreading
horizontally. Lower part of stem and
lower petioles hispid! The plant other-
wise glabrous! Plant glaucous.

No. 19,545. *Astragalus newberryi* Gray

No. 19,546. *Pentstemon monensis*
Hel.

Cor. crimson, not markedly
bilabiate. Bushy mesa. Rare.

No. 19,547. *Stanleya elata* Jones
Frequent on the bushy area
of the "valley".

No. 19,548. *Cryptantha circumscissa*

It. Low rounded dwarfs in wash.

var. *hispidula* Nees.

No. 19,549. *Eriogonum pusillum* T. & G.
fls. greenish-yellow.

Wash.

— After coming through the pass between the Coso Range and the Inyo Range (cf. top of p. 104) one finds a broad plateau valley country. As I travel on, the Argus Range, with the lofty Maturango Peak topping it, comes into better and better view. I run on into another valley lying lower on the way to Panamint Valley around north end Argus range. The road corkscrews down an abrupt mountain side with a magnificent view across the valley of a mountain in the Pinto Range with all its many colored illuminated beds exposed almost vertically for perhaps

5000 or 6000 feet. With the other wastes of the Panamint floor below it is an astonishing spectacle. On the way down I stop at a gulch on the slope and collect the following:

No. 19,550. *Chorizanthe*

* See p. 149.
No. 19,550a. Gravelly mesa.

No. 19,551. *Cryptantha micrantha* (Torr.) Jtn.
Cryptantha inaequalis Jtn.

Canon bottom, good soil.
Dark green linear leaves.

No. 19,552. *Cryptantha inaequalis*
Jtn. Canon bottom, good soil

No. 19,553. *Cryptantha maritima*
~~var. pilosa~~ Jtn.

No. 19,554.

This plant, with its white rays and yellow disk, grows in rocky crevices of the mountain slope.

No. 19,555. *Chaenactis*

No. 19, 575. *Chaenactis*
Abundant; gravelly
mesa. Beatty Fork.

No. 19, 576. *Atrichoseris*

No. 19, 577. *Monoptilon*

-I drive on to the Park Headquarters and inquire for my old-time correspondent Mr. French Gilman. He has gone to Banning for a few days and I hand my card to the Chief Naturalist, H. Donald Curry. He arranges to take me into Johnson Cañon. Two cars, one with Edgar Shanteau, Gilman's assistant, go down the valley, then ^{we} leave the road for a wagon trail thickly set with rock and coarse gravel; thence up the cañon over a very rough terrain of cañon bottom to the right-hand ^{or main} fork, up which a mile is a fine spring and daylightful camp-spot. (See p. 135.)

No. 19, 578. *Cryptantha utahensis* (Gray)
Greene.

No. 19, 579. *Cryptantha decipiens*
(Jones) Sellen

No. 19, 580. *Amsinckia tessellata*
Gray.

No. 19, 581. *Physalis crassifolia* Bth.

- *Galium* (no. 19, 800)
with no. 19, 581.

No. 19, 582. *Gilia scopulorum*
Jones. Corolla white, pink-brown
outside. Leaves extremely glan-
dular.

No. 19, 583. *Lotus schuginosus* Greene
~~var. brevirexillus~~
Cor. yellow, pinkish outside,
on banner outside becoming brown-
pink.

No. 19, 584. *Lygodesmia exigua*

These cichloriad plants
have, all, their main axis eaten
off. Rabbits says Shanteau.

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Lower Johnson Cañon, Pan-
amint Range, Apr. 19, 1940No. 19,585. *Muhlenbergia breviflora* Cov. 3000 ft.No. 19,586. *Perityle*No. 19,587. *Phacelia rotundifolia*
Torr. Stems reddish, pods
brown.

— Water! Water! The little stream
issuing from the spring makes
two little falls, a continuous
happy murmur all the day.
Above the spring rise the cañon
walls, rocky, broken, irregular
— stark naked on one side, a
thin scattered scrub of desert
shrubs on the other. Here and
there one can look out of the
cañon to the distant Black
Mountains, hopelessly forbidding.
Anywhere in these wastes, a
man cast on his own and on foot,
even with a canteen of water (cont. p. 117)

Shadscale Spr., Johnson Cañon,

Panamint Range, Apr. 20.

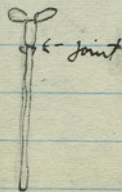
117

No. 19,588. *Amsinckia tessellata* Gray.
Nuttlets coarsely and irregularly tessell-
ate. Cañon flat. Cor. yellow, 2½ lines
diameter. 4000 ft.

— cont. from p. 114 —
would perish before he could reach
safety of a spring. Water! the
life-saving substance! In a desert
land, such as Palestine, no wonder
the metaphors of it are developed to
such a degree in the Biblical books
— the waters of life!

No. 19,589. *Euphorbia* ^{= *E. incisa* Engelm.} *schuyloboi* Engelm.

Frequent in the rocky bed of the cañon
bottom. Involucre lobes oblong or oblong-
ovate, notched or shortly cleft, not
"truncate", but irregular as to apex. Glands
only very shortly
"stipitate". No
bractelets at base
pedicels of
stamens.



The staminate pedicels protrude

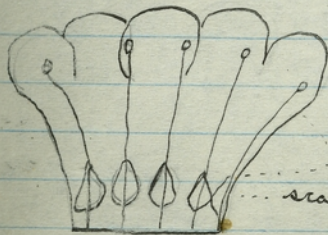
from involucre and are soon as if uniformly truncated by the falling away of the staminate flower—the filament and its anther. Styles united $\frac{1}{2}$ to $\frac{2}{3}$!!

- "No. 19,590. *Gilia scopulorum* Juss.
On talus slide. Herbage and especially leaves clammy, glandular. Cor. brilliant pink; upper part of throat pinkish, lower part yellowish; tube dull. Stamens on extremely short filaments ^{inserted in sinuses} and therefore shortly exserted from throat. Cor-tube and throat 2 times as long as calyx. Calyx-lobes short, cuspidate, a narrow interval ^{of tube} membranous to base. Cor-throat $\frac{2}{3}$ as long as ^{nearly} -tube. Ovary glabrous; ovules about 14. Stems with very unequal spreading gland-tipped hairs, a few on pedicels and calyx; slender gland-tipped hairs on calyx-throat. Cont. p. 120.

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- "No. 19,591. *Phacelia cryptantha* Greene.
Talus slide. Cor. dull white, lobes transversely broad-elliptic. Annual.



Cor. aging sodid, or sometimes purplish. Stems many, forming a low plant, soft in appearance, ^{diffusely decumbent}, 2 to 4 times as broad as high. Rocky slopes.

- "No. 19,592. ^{=Descurainia} *Sisymbrium*

- "No. 19,593. *Phacelia notanckifolia* Torr.

- "No. 19,594. *Eummanthe penduliflora* Bth. Cañon bottom.

- "No. 19,595. *Eschscholtzia minutiflora* Wats. Cañon bottom.

- "No. 19,596. *Lepidium fremontii* Torr. White-fl. crucifer. Common bush on the hills, now in full flower.

No. 19,597. *Eriophyllum*

Pappus reduced to a very narrow or low cup, its border apparently entire. Cor. outside glandular-pubulent.

Reys 8, 8, 8.

Talus drift and cañon bottom.

- *Gilia scopulorum* Jones, no. 19,590.
Stamens on short filaments but erect and distinctly exerted from throat!
Compare with the small-flowered state of *Gilia tenuiflora* var. *latiflora* ^{no. 19,598} which likewise grows here at the spring. It has a broader corolla, stamens on still shorter filaments inserted in sinuses but declined!! style (spreading horizontally) 2 times as long in var. *latiflora* as in *G. scopulorum*. Cor. red (livid) in *G. scopulorum*, pink in var. *latiflora*; cor.-lobes in *G. scopulorum* $\frac{1}{2}$ as long as in *G. tenuiflora* var. *latiflora*.

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- No. 19,598. *Gilia* ^{ana Jones ssp. *triceps*} ~~*tenuiflora*~~ ~~Bth. var.~~
~~*latiflora* Gray, small-flowered form.~~ Leaves pubescent or very thinly tomentulose, not at all glandular; whereas very glandular in *G. scopulorum* (no. 19,590). Cor.-lobes with an obscure obscure apex in 19,598; distinctly apiculate in *G. scopulorum*. See no. 19,629.
See p. 121.

- No. 19,599. *Phacelia rotundifolia* Torr.
Leaves orbicular and cordate at base to ovate, serrate. Wash, sandy-gravelly. Cor. white, tubular, little exceeding calyx, its lobes short and broad (transversely quadratisch). Stamens 2 long and 3 short, about $\frac{1}{2}$ as long as tube and throat, no scales at base filaments!! Tube and throat not differentiated. Cor. $2\frac{1}{2}$ lines long.

No. 19,600. *Phacelia distans* Bth.

Scales slightly dome-shaped (cupped below), spreading transversely or curved a little transversely, united in pairs to filament and ^{forming} a little sac-like behind filament. Filaments exserted from throat, about equaling lobes. Perhaps it were better to say, instead of "dome-shaped" scales, ^{scales} ^{inversely} bowl-shaped and somewhat undulate. ^(a little) and spreading transversely. Perhaps better: scales curved and spreading transversely, inversely a little ^(bowl-like) ^{perhaps a little} upside-down or ^{perhaps a little} dome-shaped, united in pairs to the filament and so forming a slight sac behind filament. — The scales as described seem to me exactly like the scales in the plants of *Phacelia distans* about San Francisco Bay in the Coast Range, as does the plant as a whole.

The plants grow on rocky sliding talus just as often in central California. Cor. lavender.

No. 19,601. *Cryptantha pterocarya* (Torr.) Greene. Margin of nictal wings toothed! Rocky talus.

No. 19,602. *Cryptantha nevadensis* Nels. & Kon. Stems slender, flexuous or weak. Rocky cañon bottom.

No. 19,603. *Ellisia micrantha* Brand Rocky talus slope, northerly slope. = *Eucrypta micrantha* H. & A.

No. 19,604. *Gilia filiformis* Parry. Cor. yellow, turbinate-bowl-shaped, cleft $\frac{2}{3}$. Calyx cleft nearly to base, its lobes membranous-margined narrowly below apex. Talus slide.

No. 19,605. *Mimulus fremontii* Cor. crimson; throat on lower slide yellow and purple-dotted. The throat is long and extends down

to the calyx. Talus slope.

No. 19,606. *Galium*

No. 19,607.

This fern grow in a shaded rock crevice.

No. 19,608. *Pentstemon*

Cor. dull white outside, ^{white inside with} a pink flush on inside of lobes on lips; a purple line running from tube out onto ^{each} lobe of lower lip and stopping or rather ending a little beyond center of lobe. Upper lip shortly lobed, the lobes turned backward a little, the throat distended or broadly hooded on upper side with the pairs of stamens approximate by their anthers under it and also ^{approximate} the tip of the glabrous style stamen. Style declined on the middle lobe of lower lip; ^{sterile} ^{fil.} very hairy

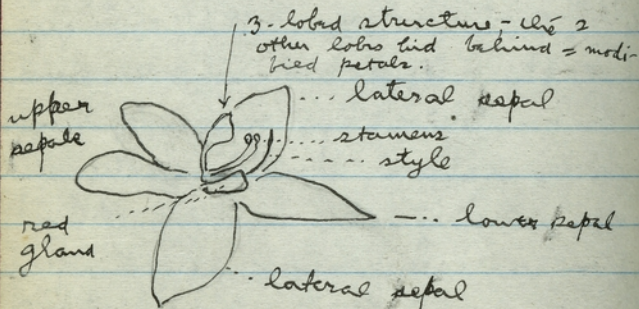
at end. Dense bush, the branches numerous, forming a rounded plant 15 to 24 inches high. Foot of rocky talus. Abundantly covered with blossoms.

No. 19,609. *Lupinus magnificus* Jones.

Single stem 3 ft. h. from a heavy basal leaf rosette, the leaves mainly from axillary buds. Stem entirely naked, unbranched, ending in a raceme 18 in. long. Flo. large, reddish purple. Sides of banner reflexed. Center of banner faintly yellowish, ^{some} aging dark purple. Middle of acumen villous. Lower calyx-lip entire; upper lip cleft half-way. Cont. p. 160.

- *Salazaria mexicana*, common on rocky arid slopes, not yet in fl.
- A black-headed trooper with his red-brown breast and flashing contrast of white and black wing feathers is sojourning in the mesquite thicket here at camp.

No. 19,610. *Krameria parvifolia* Bth.
probably var. *glandulosa* Nees.



The two somewhat quadratish glands, red, form a pair, one on each side of the ovary which is white-hairy and sprinkled thickly with stalked red glands. The sepals are hairy and with trichome-like glandular processes on the parts of the sepals exposed (not covered by overlapping) in the bud.

Plant low, small, stems trailing ground. Cont. p. 144.

No. 19,611. *Lupinus excubitus* Jones.

Cor. blue, banner whitish with bluish overshades. Center of banner with a well-defined yellowish spot - that is pale yellow - which is brown-dotted. Acumen glabrous. Lower calyx-lip entire, upper lip cleft half way to base of calyx. Broad rounded bush 3 to 3 1/2 feet high, topped by numerous racemes ^{the main body} 6 to 10 inches long and now in flower, the axes of last year's racemes - white stems - standing gaunt amongst the living inflorescences. Leaflets deciduous early separately, leaving the petiole on the stem, these petioles persistent and becoming indurated, circles of them standing horizontally, persistent for three years more or less. Main stems several

from the ground, $\frac{3}{4}$ to $1\frac{1}{4}$ inches diameter.

No. 19,612. *Microseris linearifolia*

This eichoriad seems very rare on the rocky brushy slopes.

No. 19,613. *Rafinesquia*

Uncommon on the rocky gravelly slopes.

No. 19,614. *Cryptantha utahensis* Greene. Cor. white with the central papillae yellow. Very abundant on the rocky brushy slope S. of camp.

No. 19,615.

This eichoriad has clear lemon-yellow flowers - uniform color across throat. Rocky brushy slope.

No. 19,616. *Oenothera caespitosa* Nutt. Cor. aging dull crimson. Rocky brushy slope.

Cor. white, soon aging pink (in a few hours). Petals orbicular-ovate, broader than long, deeply notched at apex.

No. 19,617. *Arenaria macrodenia* Wats. Petals greenish-yellow!! oblong-ovate; stamens opposite petals the longer; stamens alternate petals with the filament arising from near the base of a pair of erect cylindric glands united below. Stamens and glands inserted on the disk. Rocky brushy slope.

No. 19,618. *Cryptantha* v. *Brevarya virginensis* Mcbr. Rocky-gravelly brushy slope. Cor. white, with yellow papillae in center.

No. 19,619. *Salvia* ^(Spring) ~~caerulea~~ ^{Dorrii (Kell.) Abrams ssp. nov. or-genton (Johnson)} Stamens 2. Upper lip cleft over half way, the lobes and lateral lobes lower lip broadly elliptic; middle lobe of lower lip transversely elliptic, that is middle lobe transversely broadened and strongly retuse. Cor. - throat hairy, the hairs running up and out onto

middle lobe lower lip. Upper calyx-lip
very broad, truncate, obscurely retuse,
not "rounded, emarginate" as said in
Man. p. 870. Cor. blue.

No. 19,620. *Atrichoseris platyphylla*
Gray.

Heads pearly white and
very beautiful. On their stems, held
aloft in the gravelly washes so
delicately as to seem like float-
ing bodies to the eyes of the
miner, the plant is here in
Death Valley called Gravel Ghost!

In the night the heads shine
luminously! Heads $1\frac{1}{4}$ to $1\frac{3}{4}$ in. across.
Summit of ridge south-east of camp.

No. 19,621. *Muhavva breviflora* Cov.

Stoutly plants of steep
rocky-gravelly-bushy slope. Cor.
deeply 2-lipped. Upper lip shallowly
lobed; lower lip not deeply lobed.
Lobes much alike; but lower lip

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with an intruded quadrate elevation or
elevated palate with a broad hairy
band on it running down into
throat. Lobes all acute, those of
upper lip more markedly acute.

No. 19,622. *Perezia douglasii* DC.

Rays clear yellow, 13, 16,
12, 13, 14, 13, 13. Stems many from
a woody base.

No. 19,623. *Pucephyllum schottii* (Gray)
Gray Top of ridge south-east of camp.

No. 19,624. *Muhavva breviflora* Cov.

Talus, the sliding gravel tends
to cover up the ^{slope} colony. Top of ridge
se. of camp.

No. 19,625. *Nicotiana trigonophylla*

Dunal. Stamens inserted at sum-
mit of tube about $\frac{1}{3}$ as long as
throat. Throat and stamens glab-
rous; style glabrous. Cor.-tube

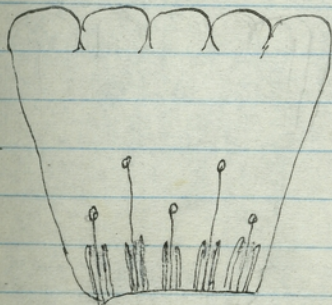
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puberulent inside. Stems many from a woody root-crown. Corolla green-white. Summit of ridge ss. of camp. Upper leaves sessile-auriculate; lower ones wing-petioled. Corolla slightly constricted at base of lobes.

No. 19,626. *Phacelia perityloides* Cov.

Herbage extremely glandular-hairy. Cor. white, its lobes transversely elliptic. Cor. campanulate; throat dull yellow; tube very short. Stamens 2 long, 3 short. Scales narrow, linear or lanceolate, standing vertically, the pairs quite distinct. The scales run straight down to base of corolla and are quite free from the filaments which are slightly dilated downward. Stems decumbent with ascending branches forming a dense plant. Root-crown woody!! Here follows a

diagram of the corolla spread open



This plant is found on cliffs, north side of mountain slope, in small recesses, and in crevices of the cliffs.

No. 19,627. *Castilleja*

Cor. pink, the galea with a narrow-lanceolate ^{green-herbaceous} band on each side extending to tip, the upper half of galea with the 2 green bands separated by a narrow or slit-like scarlet membrane. Lobes of bracts and tips of calyx scarlet. Rocky brushy hill slope. Rare.

— *Swertia* Graservine mts.
— *Mirabilis fraebellii* var. *glabrata*, "near Panamint Country"
M. F. Gilman in litt. 2-6-41.

No. 19,628. *Poa scabrella* (Thurb.) Benth. ex Vasey

This grass forms heavy
tussocks at or nearly at ground level,
from which arise the shoots of the
season. Rare. Summit of ridge
se. of camp.

No. 19,629. *Gilia* ^{*ana Jones ssp. triiceps (Brand.) A. N.*} ~~*hirsutiflora* Bth. var. *triceps*~~
~~*latiflora* Gray. small-flowered form.~~

Cor. pink or lavender. Stems at
first declined in throat, but later
erect when stigmas are horizontally
spreading. Notice the variety of
shape in primary leaf-lobes in this
collection from one narrow colony:
bipinnatifid and simply pinnatifid,
"sinuata" type, and lacinate ("in-
conspicua") on one small plant.

No. 19,630.

Ligules: Clear lemon yellow ^{throughout} heads.
Summit of ridge se. of camp.

No. 19,631. *Salvia columbariae* Bth.
Summit of ridge se. of camp.

-Cont. from bottom p. 114. The spring
where we camp is about 12 miles
from the Death Valley road. Almost every
foot of it the car swayed and
jerked as it rocked over the boulders
which filled the way. The largest
boulders had been rolled out of
the trail but in many places where
winter torrents had done their work
it was pioneering over banks and
gullies. The camp spot is, however,
a delightful one for this desert land.
Here we find a bench in an elbow
of the canyon, say 100 yards wide
and 400 yards long. It is a tilted
"apron" due to deposit of erosion
from the neighboring slopes, but

unusually near level for the Panamints. The spot is diversified by a number of cottonwood trees (no. 19,797), a few willow trees (no. 19,633) and a few mesquite (*Prosopis glandulosa*). Many different shrubs and bushes make a thin covering on the slopes, on the flat, and in the creek bottom. *Baccharis sagittifolia* (Squaw Water-Weed) is abundant on the flats - these shrubs with the Cottonwoods being a sure sign of water in the desert. This spot, like most places in the desert, has been occupied as a sort of ^{with a spring} nomadic habitation - an enclosure of the spring area is made by a rough fence of cottonwood poles and mesquite posts, whilst on the creek side the spot is protected in part by a

wall built of stones. The water is conducted from the lowest of a series of springs running up the gulch by a pipe. It runs on down through the bushes, enters another pipe and makes a little fall where it comes out of the pipe, convenient for our use. The little stream runs on down, passes through the ^{rock} wall by another pipe and makes a fall onto the creek bottom. At this spot, outside the enclosure the wild animals mostly come to drink, in particular the wild burro.

Our first afternoon a band of six of them came up the wash to water. In single file, moving slowly, placidly along, they looked not at all "wild". Last night they came in at 2:00 o'clock. I notice one extremely interesting

thing about the burros: they do not defecate near the watering place. The place is perfectly clean. There is no dung at all about the creek bottom near the water.

The Bray of these donkeys is a most unhappy sound. It is as if they were trying ^(in all they represent) to express themselves by their cry — an attempt utterly, hopelessly futile, ending in utter failure — despair's last discordant note. And yet curiously when they raise their voices afar off, the sound in the remote cañons is not unpleasant — sometimes ^{even. flute-like, sometimes} like the dull distant roar of a locomotive engine. It must be that the steep cañon walls take up and alter or echo the sound so as to transform it or ^{modulate} it.

There are ^{mountain} quail here, mourning doves begin their plaintive call in the late afternoon and a brown-headed humming bird has a nest with two eggs in it in a *Brickellia* bush on the near hillslope. All about the upper springs and down along the cañon wall are grape-vines. And there is constantly the pleasant sound of falling water — no other sound having quite such meaning in this land of utterly gaunt and forbidding mountains, of waste distances extending to far horizons.

As always where the white man has a habitation or corral for domestic animals there are the immigrant plants and here are *Sonchus asper* and *Medicago hispida*; also *Erodium cicutarium*, but this might be anywhere ^{that} in the desert.

At the lower end of the cañon bench, in the wash, is (Cont. p. 153)

140

Shadscale
SpringJohnson Canyon,
Panamint RangeNo. 19,632. *Vitis girdiana* MunsonNo. 19,633. *Salix*

Tree 19 ft. high.

No. 19,634. *Salix*

Rounded shrub (or tree)

14 ft. high and 20 ft. broad.

In creek bottom.

No. 19,635. *Baccharis sergiloides* Gray

The panicles are quite

leafless. One folder shows leafy panicles but the leaves are of this season arising in last year's panicles, the inflorescence of a year ago. Dense shrub 3 to 6 ft. h.

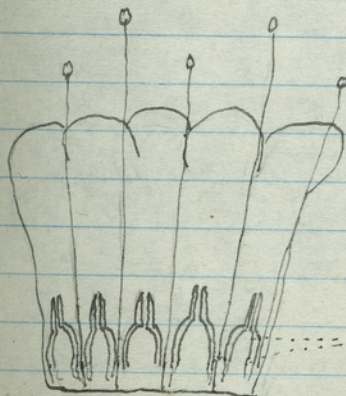
No. 19,636. *Brickellia longifolia* Nutt.
~~det R. B. Dick~~

See p. 155. Last year's panicle of this composite with leafy shoots of this season arising as infraxillary shoots at base of panicle branches of last season. Dense shrub 4 to 8 ft. h., sometimes 9 ft. Stems numerous from base, slender; bark white; leaves deep green.

4000 ft.

Apr. 22, 1940.

141

No. 19,637. *Phacelia radiculata* Gray.

..... this portion of scale quite broad, standing vertically and curved, so that with companion scale it forms a hood.

("white eye" (tube and throat):

Cor. light purple; stamens dark purple, much exserted. The scales are free from the filament. Each scale originates near base of filament, curves inward and approximates curving scale of neighboring filament. This curved portion is quite broad and stands as if were vertically; the two scales approximating thus make a hood

between each pair of filaments. This structure is scarcely represented in the diagram p. 141 because there is no proper foreshortening of the organs involved. But the scales of the pair above the "hood" portion are abruptly narrowed to a short lanceolate apex; the whole scale being adnate to corolla. The parts of the hood are somewhat inversely dome-shaped. The margin of the scale is marked by a purple line.

These plants grow on a rock-shade talus near camp. Not abundant. Scattered up the steep gradient, consisting of a single stem unbranched below the inflorescence, the stems bear widely spreading long-petioled, blades, the blades pinnate and pinnatifid, the whole blades "crumpled" and undulate. At a little distance the thick

fleshy petioles spreading widely with compact tufts of green at the end, make an recall miniature cedar plants, an effect heightened by the ^{contrast between the} pink-brown stem and petioles and the green leafage. Entire herbage very glandular and ill-smelling with spreading gland-tipped hairs. Stems and petioles and roots very fleshy.

No. 19,638. *Synapterus*

This umbellifer on the talus slope near camp. Low, decumbent.

No. 19,639. *Rapidium*

No. 19,640. *Cirsium*

Cañon bottom. 6 ft. c. Stem unbranched below the summit loosely-branched panicle. Fls. white.
 - *Prosopis juliflora* var. *glandulosa*.
 - *Rarea tridentata*
 - *Pterostegia drymaroides*

No. 19,641. *Sphaeralcea*

Stems numerous from the base, forming a broad rounded clump 2 ft high and 3 ft. broad. ~~Common bottom.~~ Also on slopes. Calyx with 2 or 3 filiform deciduous bractlets. Cor. bright brick-red.

— *Krameria parvifolia*, cont from p. 126, that is no. 19,610. Corrections: the ovary glands are obovate-or-bicular, a little like an *Opuntia* slab. The red subulate processes show scattered barbs, ^{up and down} at this stage, of 1 barbe or hooks. Style glabrous! Ovary glands dark-red. Peduncles bearing one pair of opp. bracts! On the material put in press some peduncles have 2 pair bracts I think, but the material brought in from the same locality this morning show only one pair.

No. 19,642. *Ephedra*

shoots of season light green. Staminate catkins obovate, about 3 lines long, consisting of about 12 to 14 flowers, each flower consisting of a perianth, flattened fore and aft, of 2 segments united nearly to summit and so sac-like, the sac suborbicular and margined. Stamens 3 to 8. I count 16 flowers in the catkins, 3 counts. The perianth is broadly elliptic with low-rounded orifice; or sub-orbicular as said above. Each fl. is subtended by a thin suborbicular bract! Flowers bright greenish-yellow. Branchlets bright green.

— *Juncus* no. 19,792, cont. from p. 199. This compact erect rounded mass of stems makes an impressive spectacle! It consists of a close stand of numerous stems without leaves, save for the bracteal leaves at summit.

146

Shadscale
Spring{ Johnson Cañon,
Panamint RangeNo. 19,643. *Ephedra*

Staminate catkins 2 to 2½

lines long, 6 to 8-flowered. Perianth flattened fore and aft, elliptic, its lips rounded, - not subtruncatish as low-rounded as in no. 19,642.

Flowers brownish-yellow, each subtended by a thin bract! Branchlets yellowish-green.

- This evening the interval between the calls of the mourning dove was shortened or perhaps a larger number took part, so that it was for a time like a concert, - continuously murmuring - *Astragalus*

no. 19,646.

Cont. from p. 147. Pod 1-celled, the dorsal suture intruded about 1/3. Fls. pink. Pod thick-cylindric. Merits often 3 ft. broad.

4000 ft.

Apr. 22, 1940

Inyo Co. 147No. 19,644. *Euphorbia*

Wachsa. Perfectly prostrate. Rocky slopes. 4 purple glands with fan-shaped white wings.

No. 19,645. *Triplex canescens* (Pursh) ~~Jamies~~ ^{Watts}. Broad rounded bush, thick (dense), 8 ft. high. At upper spring.

No. 19,646. *Astragalus mohavensis* Wats.

Stems decumbent, forming a loose mat. Rocky slope. Cont. p. 146.
No. 19,647. *Langeisia punctata* ^{Gooding}
Cor. white, its lobes dotted

with black-purple spots. Calyx about as long as corolla tube and throat, its bristles much longer. Center of corolla-lobe with a pair of linear bands marked at apex with a yellow spot. These linear bands are really shallow grooves; they are mostly unspotted. Filaments inserted just below sinuses of corolla, the stamens almost as long as corolla-lobes.

148

Shadacale
SpringJohnson Cañon,
Panamint Range.

No. 19,648. *Montzelia involucrata* Wats.
Outer (longer) stamens
with a horn or process on each side
the anther, as long as anther; the
short stamens with a minute horn
each side the anther. Filaments
all flattened. Rocky ridge. Petals
a satiny light-tan color.

No. 19,649.

This composite has
many stems from a shrubby base
 $1\frac{1}{2}$ to 1 foot high and a very
heavy (1 in. diam.) root. Rocky
ridge, south west slope. Cor. rays
obliquely truncate as it were and thus
5 lobed, the central flowers discoid.

4000 ft.

Apr. 22, 1940.

Inyo Co.

149

M. bigelovii Gray, not

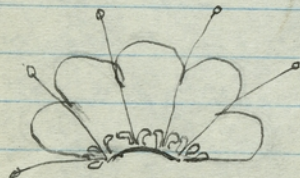
No. 19,650. *Mimulus fremontii*
Gray. Cor. crimson; lobes of
upper and lower lip of about same
size and pattern, so that the
flower might be called regular
save for the marked yellow-
two-banded palate in throat
against lower lip. Marked purple
spot in throat on each side just
below sinuses between upper and
lower lip. I count 16 fls. in the
satkins, 3 counts.

No. 19,651. *Phacelia crenulata* Torr.

Cor. blue, ^{broadly} campanulate, the
tube and throat very short. Stamens
exceeding corolla. Rocky slope. Cont.
p. 150.

— *Eremocarya micrantha* Greene.
See p. 111 ante. Cont. from no. 19,550a.

- *Phacelia* cont. no. 19,651.



The scales curve away from fil-
ament and approximate scales of neigh-
boring filament, the pairs making a
sort of hood or arched sac. They are
broader than represented in diagram.
They are not produced upward beyond
"hood" part or not very obviously.

No. 19,652. *Rebisia*

Densely and intricately
branched rounded bush 2 ft. h.
Rocky ridge. Chukawalla's Delight.
See p. 196.

No. 19,653.

This fern in rock crevices.

No. 19,654. *Ephedra*.

♀ catkins 3:— scales 16, not counting
short dense scales on basal peduncle-like
portion, Scales ^(bracts) membranous, orbicular,
a central greenish or brownish spot,
subcordate at base, clawed! shortly.
"Fruit", at flowering stage, trigonous,
included, the style exserted. Fruit
only one!! Scales ^(bracts) in whorls of 3
or spiral! not opposite. Catkins sessile.

No. 19,655. *Ephedra*

♂ catkins; scales ^(bracts) membranous,
yellow orbicular. Flowers 13, 13, in a catkin.
Branchlets light but rather vivid
green — both in this and 19,654.

Rocky steep slope — no. exposure.

♂ flowers of no. 19,654.

— Cont. from p. 244. Opposite Visalia
the Valley Oaks (*Quercus lobata*) range
west (from the great primitive grove in the
Furn Creek country) to the highway (main
road Bakersfield to Fresno) and a about a
mile west. The upper San Joaquin Valley
floor from the Tehachapi Mts. to this
point is treeless.

"No. 19,656. *Ephedra*

♀ Branchlets green. Catkins with 6 (or 8) orbicular greenish-brownish scales, ^(bracts) sessile! enclosing 2 fruits, their approximate faces flat, the tips of the fruits exposed. Scales opposite. Scales as here used = bracts. Catkins sessile.

See p. 196.

"No. 19,657. *Ephedra*

♂ of 19,656. Catkins with 4 to 6 flowers. See p. 196.

"No. 19,658. *Ephedra*

♀ catkins with 6 green bracts. Tips of fruits exposed. Fruits 2, flat faced usually, rarely 1 fruit. Catkins peduncled!

See p. 196.

— The Rock Wren is here in the Canyon, also the Black-headed Towhee.

Cont. from p. 139. a willow clump 50 ft. broad and 14 ft. high, broad and rounded and green, it is a pleasing spot in this gray land and lends a happy diversity to the place of the spring. On the base of the rocky slope are fine clumps of the Sentinel Lupine (No. 19,611) with its platoon of tall racemes, now in full flower, topping the gray bush. The willow is no. 19,634.

"No. 19,659. *Stiplex canescens* (Ph.) James. Bush 5½ ft. h. by spring, its fruits broadly 4 winged.

"No. 19,660. *Glycythamnos* ^{nauseosus} ~~aff. var.~~
^{Hall}
gnaphalodes (Greene) 6 ft. h., 8 ft. broad, many stemmed, brinks brown roughly fissured bark, stems above whitish.

— *Adiantum petatum*

At

Spr. at camp.

— Came in yesterday afternoon from Park Headquarters in Death Valley Mr. M. French Gilman. He said: When I was a boy of about 12 years, in 1884 about, E. L. Greene came to Banning. There was no hotel there at that time and travelers stopped at our ranch. Greene stopped with us. He spoke about the discovery of *Lilium Parryi* in this region and expressed his disappointment that in the year before its discovery he had been within 200 yards of it without knowing it. He went to White water in the year he was with us and my uncle who had a ranch at White water took Greene up White water Cañon because Greene wished to see the Washington Palms which grow there.

— Cont. from bottom p. 140, no. 19,636. This is one of the most common and luxuriant of the shrubs in the cañon bottom wash of Johnson Cañon. In the upper cañon I noticed hundreds of young plants in the gravel beds.

No. 19,661. *Ephedra viridis* Cov.

♀ Main bracts 6, suborbicular, green, broadly membranous margined. Fruits 2, flat-faced. ♂ catkins small, 6-flowered.

This material was obtained above camp by M. French Gilman. Today, far up Johnson Cañon, I saw two splendid (the word is not too strong) shrubs of this species on the bank of the wash: wonderfully dark green shrubs, ^{remarkably dense} clean, trim, the long ^{green} branchlets standing vertically all over the shrub in parallel

ranked! The effect is utterly different from any other *Ephedra* that I know. The other species are yellowish or pale green or blue-green in hue; they are scraggly, highly divaricately branching, often thin (not densely branched); whereas *E. viridis* is extremely dense or close in its branching.

- "No. 19,662. *Viguiera reticulata* Wats. Outer invol-bracts linear-lanceolate, ciliate; inner ones with thin tips, the lower part a little herbaceous coriaceous with thickened midrib, or chartaceous. 3 to 5-ribbed as seen from the inside, less obvious on outside; the unribbed apical part short-ovate! This herbaceous apex is not "narrowly and abruptly linear or lanceolate" as stated in Man. Key, but gradually ovate, or ovate-tipped. Pappus-anth.

subulate, shorter than achene, with intervening ^{very} short linear or lanceolate paleae. Shrub 3 ft. h.

There is an abrupt change from the chartaceous portion of bract to apical herbaceous portion in the sense that it is well-defined and not gradual. The subulate pappus-anth are broadened at base and therefore doubtless "paleaceous", but not "lacerate" in intervals, with distinct but short narrow paleae or scales. Pappus dull white at flowering stage, certainly not pearly-white.

Rays yellow. Rocky slopes.

- "No. 19,663.

Rays, 21, 22, clear bright yellow. Rocky ridges

- "No. 19,664. *Lotus salsuginosus* Greene
var. *brevisericeus* ^{Atley}
Banner yellow, changing to reddish-pink. Prostrate. Cañon bottom.

158

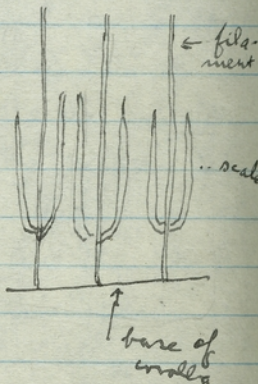
Upper Johnson Cañon, between Shad-
scale Spring and Hungry Bill, 4500
ft.No. 19,665. ? *Penstemon*Last years dead
fruiting stem; leafy shoots from
base.No. 19,666. *Covania mexicana* var.
stansburiana (Torr.) Jeps. Shrubs 5 to 6 ft.No. 19,667. *Cryptantha decipiens*
(Jones) Hal.No. 19,668. *Phacelia cryptantha*
Greene.

Cor. pale lavender.

Scales narrow,

wholly adnate,
joined to filament
at base.Stamens $\frac{2}{3}$ as

long as corolla.

Cor. small, funnel-form,
little exceeding calyx.

Panamint Range, Apr. 24, 1940.

Inyo Co. 159

No. 19,669. *Bacilleia*Shrubs few from the base,
in dry or rocky ground in arid
hills. This species the only *Bacilleia* in this
desert that I have seen.No. 19,670. *Senecio douglasii* DC.Rounded very florifer-
ous bush 2 to 3 ft. h. Rays
yellow, 11, 12, 12. Wash.No. 19,671. *Equisetum Funstonii* Nutt.In sandy soil at foot of
cliff in wash.No. 19,672. *Carex*

Marsh in cañon bottom.

— *Salix*, no. 19,674, was collected
first at camp. Afterwards it
was found all the way up Johnson
Cañon to Hungry Bill's where it
forms extensive willow thickets in
the bottom.No. 19,673. *Juncus xyphioides* E. Mex.

Cañon bottom.

162

Upper Johnson Cañon betw. Shoshone
-scale Spr. and Hungry Bill,
Inyo Co.

The following were collected on the
slopes of the ridge west of camp, that
is numbers 19,678-19,684. See p. 165.

- No. 19,678. *Ipomopsis*
Gilia polycladon Torr.
Cor. small, tubular, with
narrow limb and very short or
scarcely discernible throat, 2 lines
long. Stems widely spreading!
Cor. white, throat faintly yellowish.

Dry gravelly slopes.

- No. 19,679. *Chaenactis*

Dry gravelly slopes.

- No. 19,680. *Lewanthus bigelovii*
(Gray) Greene.

- No. 19,681. *Antirrhinum filipes* Gray.

- No. 19,682. *Pectocarya recurvata*
Jtn.

- No. 19,683. *Lycopodium exigua*

A ichoriad of the dry
gravelly slopes.

Panamint Range, Apr. 25, 1940

4500 ft.

(Hungry Bill =

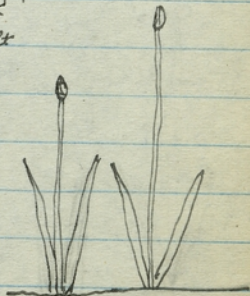
163

- No. 19,684. *Natholaena paniculata* D.C. East.
This fern on cliffs.

- No. 19,685. *Phacelia parityloides* Cov.
Faces of cliffs, in crevices

of the rocks, mainly sw. side of
cañon, but also on opp. (nr.) side
of crevices, ~~campanulate~~ or quite
protruding; imparting a soft
appearance; (herbage) much old
or last year's dead herbage
sometimes found in a plant
of this season.

Diagram of
scales.



Shows a short stamen, the scales
very narrowly lanceolate, becoming very
narrow at apex, wholly adnate,
joined to filament at base.

Cor. white, campanulate. Stamen
well included in throat. Perennial!
Stems very brittle.

- No. 19,686. *Poa scabrella* (Thurb.) Benth. ex
Vasey
This grass on dry rocky hills.

No. 19,687. *Boleophygium ramosissimum* Torr.
Rocky ridge.

No. 19,688. *Astragalus nuttallianus*
var. *imperfectus* Prostrate or recum-
(Rydb.) Barneby
bent, dry gravelly hills.

No. 19,689. *Dudleya*
~~*schottii*~~

Cor. contracted upward,
saffron. Rock ledges.

No. 19,690. *Astragalus coccineus* T.
Cdg. Dry rocky slopes.

No. 19,691. *Microseris linearifolia*
This eichoniad on dry
rocky hills.

No. 19,692. *Bromus rubens* L.
Grass, very common on
dry rocky slopes.

No. 19,693. *Festuca pacifica* Piper
Grass with preceding.

No. 19,694. *Streptanthus*

No. 19,695. *Astragalus nuttallianus*
DC. var. *imperfectus* Cor. purplish.
(Rydb.) Barneby

No. 19,696. *Salvia* ^{Dorrii (Kell.) Abrams}
var. *argentea* (Rydb.) Munz
~~*argentea*~~ ^{much} Gilman says
this is the plant named var. *gil-*
manii by Epling.

No. 19,697. *Stylidium*
gnaphalioides Nutt.

- Cont. from top of p. 162. After working
over the ridge slope, as mentioned
on p. 162, we worked down into
the bottom of Johnson Cañon and
thence up cañon to Hungry Bill's,
collecting nos. 19,698 to 19,713.

At Hungry Bill's there is something of
a cleared. The place is not now inhabited,
that which has been
there are corals, enclosures and
much built rock wall. Apple,
peach, pear and big trees have been
planted, and *Vitis vinifera*. ^{- see p. 212 -} The
peach trees are full of young
fruits. No dwelling or shelter. For
this wild desert it is a remarkably
attractive spot. Water is (Cont. p. 168)

No. 19,698. *Emmenanthe penduli-*
flora Bth. Cañon bottom.

No. 19,699. *Phacelia fremontii* Torr.
In cañon bottom on "burus", luxuriant.

No. 19,700. *Aquilegia formosa* var. *truncata*.

This is common about
Hungry Bills on the cañon floor.

No. 19,701. *Phacelia*

I think this must be
small-flowered *Phacelia distans*.
Cor. lavender.

No. 19,702. *Elaeagnus californica*
(*Sarcocolla*)

See p. 171. This echinoid, very
coarse, noted only one individual.

No. 19,703. *Rhus trilobata* Nutt. var.
anisophylla (Greene) Shreve at Hungry Bills.

No. 19,704. *Cirsium*

6 ft. h. Hungry Bills.

Stem unbranched below infl.

- *Artemisia californica*, Hungry Bills.

- *Berens monchensis* Hungry Bills.

No. 19,705. *Montia claytonia*
spiculata Dougl. On the cliffs in crevices
of rocks. Cor. white. * Hungry Bills.

No. 19,706. *Lophemia villosa* Blake
This composite grows in the
crevices of the cliffs at Hungry
Bills.

No. 19,707. *Poa scabrella* (Thurb.) Benth. ex Vasey

This grass in the rocks at
foot of cliffs, Hungry Bills.

No. 19,708. *Melica imperfecta* var. *flexuosa*

This grass in rocks and
crevices of cliffs at Hungry Bills.

No. 19,709. *Phacelia rotundifolia* Torr.

Cor. white, tubular but a
little expanded upward. Cliffs.

Hungry Bills.

- *Jasione* (no. 19,918). See p. 252.
4-25-40 at Hungry Bills, shrubs 6 to 12 ft.

* Leaves linear, much exceeding
the infl. Petioles and stems
pink.

Spr. and Hungry Bills, Apr. 25, 1940.
Dugso Co.✓ No. 19,710. ^{Dudleya}
~~Echeveria~~High on cliff at
Hungry Bills. Petals acute. Fls.
larger than in no. 19,689. Cor.
saffron.✓ No. 19,711. ^{Dudleya}
~~Echeveria~~Cliffs at Hungry
Bills.✓ No. 19,712. *Gilia stellata* Heller
~~scholastica~~ Josse
*Cont. p. 33. Cañon bottom.✓ No. 19,713. *Mentzelia oreophila*
Darlington Bush 1 1/2 ft. h., 3 ft.
broad. Cañon bottom.— Cont. from p. 165. running in
the cañon, a lively stream, in many
places 2 to 4 ft. broad. It flows
about 3/4 the distance to the
spring where we are camped.At Hungry Bills grows *Ailanthus glandulosa* — a dense stand of an acre
in cañon bottom. It is spreading.

4500 ft. Range, Apr., 1940

(Hungry Bills = 5000 ft.).

✓ No. 19,714. *Radicula nasturtium-aquati-*
cum (L.), Britt. & Rendle. Hungry Bills.Willard E. Shanteau, Apr. 20. See vol. 58,
pp. 490 and 421 for note re. Shanteau.— M. French Gilman was Superinten-
dent and disbursing agent at Fort
Bidwell on the Indian Reservation. He
had charge as overseer of two day
schools 40 and 60 miles away, and
of the boarding school at Fort Bid-
well. He is, I find, capable of decis-
ive action. The matron at the school
was a fat woman who claimed to
be part Indian and thus escaped
the civil service tests. She was
negligent and one day Gilman
caught her with a whiskey bottle
drinking whiskey, demanded and
got her resignation by 6⁰⁰ o'clock
that day. Her bureau, after she
left was found full of empty

whiskey bottles. He was also connected with the Indian Reservation at Saco, Ariz. Pima Indians who are farmers; 2000 of them. He often had to cross the Gila River in flood in June (melting snows in the mountains) to get medicines, supplies or emergency rations. He waded or swam, - except when floating mesquite trees made it dangerous. The Indians first cross on foot, trampling down the quicksand; then they drive loose horses across to settle the ford further; then a team with a wagon is risked.

Gilman, in his garden at Banning, has crossed *Bilimium Humboldtii* and *T. Parryi* and got fertile offspring with intermediate characters.

26 April, 1940

pollen of *Humboldtii* on *Parryi*. He has also grown seed of *Bausonia brevifolia* and *A. tomentosa* in his garden, the seed from Morongo Valley. He says the plants do not breed true and that he does not regard *A. brevifolia* as even a good variety.

- Cont. from p. 166. *Lactuca* no. 19,702. A colony^{no. 19,722} of this is found on a rocky talus in a small area^{20 ft. square or so} in the left-hand fork of Johnson Basin and nowhere else on that long day's tramp. It is wonderful how, to what degree, species are localized! In upper Johnson Basin it was found only near Hungry Hills, one individual! *Oenothera* no. 19,616, is not in colonies, but one finds widely scattered individuals. No. 19,702 is fleshy!

Inyo Co.

- Today, Saturday, Apr. 27, we went down Johnson Canyon from the spring and then up the main left-hand fork - a fork which goes back down to main range. Worked on the wash and at intervals up the slopes on southern side of canyon (north exposure). Cont. p. 182.

"No. 19,715. *Eriogonum nidularium*
Cov. Wash

"No. 19,716. *Eschscholtzia*
Wash. *minutiflora* Wats.

"No. 19,717. *Oenothera batrya*
var. *johnstonii* ? acc. Gilman
Wash

"No. 19,718.

Rays white, short; disk
yellow. Wash

"No. 19,719.

Rays yellow; disk light
orange. The most floriferous plant

27 Apr. 1940.
3500 ft.

in the washes now, abundant, giving more of a cheerful spring-like air to the canyon floor than any other plant. Common all the way up to the spring in left-hand fork.

"No. 19,720. *Asragalus mohavensis*
^{Wats.}
Slender many from base,
prostrate. Plants often 5 feet broad.
Pod 1-celled; false partition a little
intruded on dorsal side. Cell-walls
thick. Cor. crimson. Pods num-
erous, weighting the stems heavily.
- Spm. changes in drying through elongation
in darkness of pedicels.

"No. 19,721. *Thysanocarpus laciniatus*
Nutt.
Rock talus! every. Only
seen once.

"No. 19,722. *Lactuca*

Ligules white. Colony on
a rocky talus.

No. 19,722 a. *Delphinium*
Wille 19,725.No. 19,723. *Sphaeralcea ambigua* GrayExtremely shrubby
clumps; bushes with many or
numerous stems from base. Wash.No. 19,724. *Sitanion hystrix* (Nutt.) J. G. SmithGrass in rock crevices
at foot of cliff on gulch talus.No. 19,725. ~~*Claytonia*~~ *perfoliata* Donnell
+ WilleLike the coastal form but more
condensed. Rock crevices, talus
slope, foot of cliff.No. 19,726. *Oenothera*Flowers yellow, aging pink
very soon. Stems several from base.
Wash.No. 19,727. *Festuca pacifica* Piper

This grass in cañon bottom.

No. 19,728. *Bromus trinii* Desv.

This grass in cañon bottom.

= *A. perennans* Wats.No. 19,729. *Arabis gracilipes* Greene.

M. F. Gilman. Rocky slope.

Apr. 27, 1940.

Inyo Co.

No. 19,730. *Melica frutescens* Scribn.This grass in rock crevices
up on rocky slope. M. F. Gilman.No. 19,731. *Vertigo*Fils. not dilated; no horns.
Stamens 22. Petals yellow, obovate
with short broad claw, the claw
pink umbro. Wash.No. 19,732. *Lupinus*Low branching; Banner
keeled, yellowish, ^{shorter than wings,} as seen from side
narrower than wings, keel less a
little narrower actually when spread
out. Wash. Scattered plants, not
many. Keel broad, wholly glab-
rous, its acumen short.No. 19,733. *Filago*.Wash. The only individual
found; though search was thorough for
miles.

Apr. 27, 1940
3500 ft.

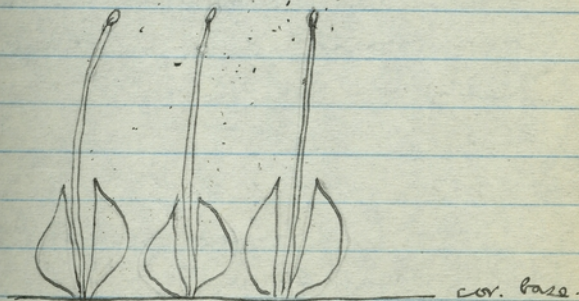
No. 19,734. *Cynopteris*
Rock talus, an occas-
ional plant.

No. 19,735. *Mimulus* ^{*u. ligelovii* Gray; not}
fremontii
Gray. Wash. Same as 19,605.

No. 19,736. *Chaenactis*
Wash. Leaves fleshy,
cord-like, entire, or rarely with a
pair of short lobes at middle.
Cor. pure white.

No. 19,737. *Phacelia cryptantha*
Greene. Annual. Rocky talus.
Calyces so densely hispid at base
as to appear like woolly spots.
The scales are semi-ovate, adnate
their whole length and erect
with the broadest portion spreading
outward or away from the fila-
ment. Scales united to filament
by a narrow base at base of
filament.

This diagram of 3 pairs of



scales must be interpreted in
terms of my description. Scales
short, drawn down ^{above} abruptly
to a point. Corolla dull white-
(or lavender-tinted), campanulate
with narrow limb. Stamens
erect from throat, shorter than
cor. lobes. The leaves are some-
what distinctive. Rock slide!!

"No. 19,738. *Salix*Stems slender, erect,
little branched and that
strictly. At Spring.
Quail"No. 19,739. *Malacothrix glabrata*(Quail) Canary yellow ligules
Wash. near Spring.

"No. 19,740.

Rays 5!! yellow. Low-
branched. Wash."No. 19,741. *Oenothera*

Cor. pink. Wash

"No. 19,742. *Cryptantha racemosa* Greene. Rocky wall."No. 19,743. *Brickellia desertorum*Cor. Composite. In shale
bed canyon bottom. Herbage aromatic with a pleasant orientals
odor. Bush $1\frac{1}{4}$ ft. h.

Apr. 27, 1940

3500 ft. (Quail Spring =
4500 ft.)"No. 19,744. *Haplopappus linearifolius*
var. *interior* (Cor.) Jones
Rays yellow, 7, 10, 10.10. Rocky slope. Bush $2\frac{1}{2}$ to
3 ft. h. Near Quail Spring."No. 19,745. *Cryptantha barbigena*
Greene. Near Quail Spr. Canyon bottom wash."No. 19,746. *Eriogonum saxatile*
Wats. Rocky bed canyon bottom
near Quail Spring.

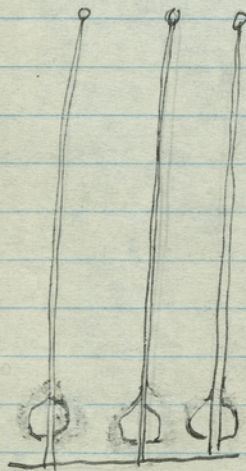
"No. 19,747.

at Spring. Same as no. 19,719.

"No. 19,748. *Chaenactis*
near Quail Spring. Canyon bottom."No. 19,749. *Bisium*Fls. white. Colony in
canyon bed. Stem very leafy, simple
up to panicle, 8 ft. h. Panicle
open. Near Quail Spring.- *Pharastegia dymarioides*
cliffs on outcrops.

Rocky

- No. 19,750. *Phacelia cryptantha*
Greene. Rocky talus. Cor. low-
ender. Calyx-lobes linear-
oblanceolate, narrow below,
spreading basket-wise above
the ovary. or above its base.



Scales very
small, adnate
to cor. and
to base of
filament in
such a
way as to
make a
pocket behind
filament.

Stamens as long as corolla.

Apr. 27, 1940

Inyo Co.

4000 ft.

(Actual Apr. = 4500 ft.)

- No. 19,751. *Ellisia*
Rocky talus.
No. 19,752. *Arabis*
Cor. pink. Rock
talus.
No. 19,753. *Arabis*

Perhaps same as

preceding number.

- No. 19,754. *Bromus rubens* L.

This grows in cañon
bottom. only clump seen.

- No. 19,755. *Microseris linearifolia*

This cichoriad in cañon

bottom.

- No. 19,756. *Mimulus fremontii*

Gray. Wash. = *M. ligularis* Gray.

- No. 19,757. *Orobanch*

anthers glabrous! and

the cells with markedly acute
tips at base! On *Antennaria*-
^{*dracunculoides*}

Coll. M. F. Gilman. Stamens equal,

little more than half length
cor.-tube. Rocky ledge, foot of
cliff.

(Quartzite Shuffor)

- cont. from p. 172. We, M. F. Gilman
and I worked up the left-hand
fork some distance. At intervals we
pass transverse rifts in bottom of
cañon, shale beds lying more
or less horizontally, which make
waterfalls when there is water. We
pass around these by detour trails
on the cañon side. We go as far
as a point where the country opens
out of the cañon for say two
miles before reaching the base
of the slopes which bear ^(Pinus monophylla) piñon.
It is a long up-hill, up a wash
which does not show to the eye
the real amount of grade. Said
M. Gilman: "Gravity makes a real

difference". We made a fine haul
of plants, many species being
found in only a few individuals.
Many species that are small, occur
so rarely, they are so scarce, that
one has to watch very searchingly.
"One overlooks many small plants
walking along", says Gilman.

Gilman is an extraordinarily
excellent desert man and keen
observer. Picking up a dead stick
in the wash, he said: "This is willow
drift. There must be water higher up."
Finally he exclaimed, after about a
mile, "There is *Baccharis virgificoides*.
A spring must be near". And it
was proved. In the cañon bottom are
two small springs near the
transverse wall which here closes
the cañon floor, making a "waterfall",
and necessitating a detour trail over

the cañon slope, until coming into the cañon bottom again at the top of the transverse ledge or block. Beyond this a quarter mile the cañon "opens out," as said on p. 182.

No. 19, 758. *Oenothera*

Wash of cañon bottom in rocky places. 1 to 3 ft. h. Petals yellow, soon drying brown.

No. 19, 759. *Calycoscinus pittieri*.

19, 759a - *Malacothrix glabrata* Clear lemon-yellow ligules. Wash of cañon bottom.

No. 19, 760. *Cucurbita palmata* Wats.

Wash.

No. 19, 761. *Gutierrezia microcephala* (DC) Gray

See p. 196. Low rounded bush 1 to 1½ ft. high, its stems slender, numerous from the woody branched basal crown, little or not at all branched below infl. Dry gravelly hills.

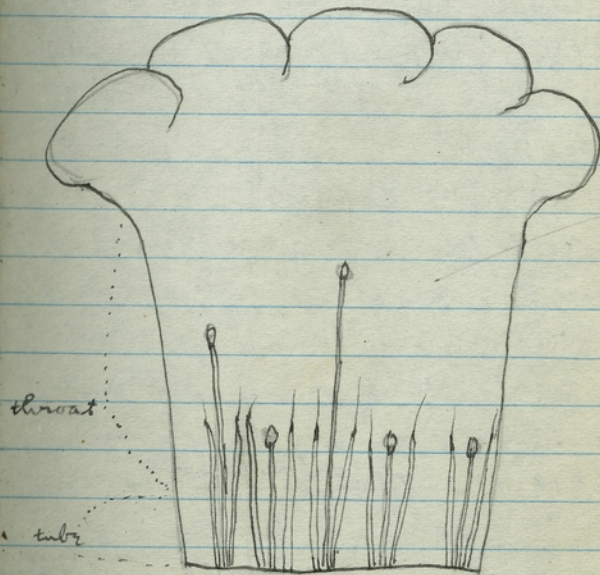
Apr. 28, 1940.

4000 ft.

rays gold.

No. 19, 761 a.

No. 19, 762. *Placelia perityloides* Cov.



Scales very narrow! scarcely to be called ^{even} linear! insufficiently wide as

All are produced upward as marked veins to cor.-lobes, but not shown in above diagram. Cor. white. Its throat very long; its tube very short. Throat faintly yellowish.

Inyo Co.

Stems forming a low soft decumbent mat, on faces of cliffs. Wonderfully fragile stems.

No. 19,763. *Euphorbia*

Glands 4, purple, the white wings narrow, 3-toothed. Wash.

No. 19,764. *Mentzelia*

Stems many from base, forming a clump. Wash, rocky.

No. 19,765. *Thelypodium cooperi*
= *Caulanthus*
Wash.

No. 19,766. *Gilia latiflora* ^{Gray} ~~Gray~~
^{Gray Jones, ssp. *triceps* (Brand.) A. V. Grant}

small-flowered form. Same cor. size and color markings as 19,629. Cor. pink, lower portion of throat yellowish, upper purplish, tube reddish-brown. Wash. Leaves minutely tomentulose, not glandular.

Apr. 29, 1940

3500 ft.

No. 19,767. *Chrysothamnus teretifolius* ^(D. & H.) ~~Hall~~ Rounded "composite" bush 3 to 6 ft. h., wash. Leaves resinous punctate.

No. 19,768. *Chrysothamnus paniculatus* (Gray) ~~Hall~~ *Compositae*. Bush with many erect stems from base; stems little-branched and that branching above and erect. Abundant in wash. 7 ft. h. See p. 195.

No. 19,769. *Argemone munita* ^{Dar. & Hilleb.} ~~Hilleb.~~ Stems several from base.

No. 19,770.

Rays yellow, Wash.

No. 19,771. *Gilia stellata* Heller

Cor. white inside, slightly brownish outside. Stamens with very short filaments inserted at sinuses, the stamens therefore very shortly exserted from throat.

Cor. changing to yellow in drying!

No. 19,772. *Oenothera caespitosa* Nutt.
Rocky banks. Cor. white.
soon drying pinkish. Capsule
with warts on angles.

No. 19,773.

Rounded branching bush
1 to 1 1/4 ft., rocky slopes. Leaves
and young shoots dark green,
older stems white-barked. Ray
1, short. See p. 196.

No. 19,774. *Satura meteloides*
Lb. Cor. plicate-cumulate
in bud, erect and with lavender
margin, the margins soon
drooping or reflexed; in age
or drying the ^{white} corolla lavender.
Cor.-border (at all angles) with
5 long-flagellate appendages!
very prominent when in full
anthesis.

Cont. from p. 201. Composite shrub 3 to 3 1/2
ft. h. Rays bright yellow. ^{No. 19,796,} Wash.
No. 19,775.

Composite shrub growing
alongside no. 19,796 and like it
in every particular, save that the
rays are more numerous and
cleft into 4 lobes; in 19,796 rays
barely toothed or subentire. Wash.

No. 19,776. *Sphaeralcea ambigua* Gray

Stems many ^{or numerous} from base
forming a broad rounded shrub or
bush, the stems mostly un-
branched above the woody
branched base, each with about
40 to 70 flowers and buds, thus
with 200 to 400 flowers on a
bush, the crimson corollas in
the sun making a fine show

in the washes. Corollas 1 in. long,
1½ to 1¾ in. broad!

No. 19,777. *Cryptantha utahensis*
Greene. Rocky slope near foot.

No. 19,778. *Eucrypta chrysanthemiifolia*
Greene var. *bipinnata* - Rocky slope near
tifida (Torr.)
foot. Cor. minute, white.

No. 19,779. *Gilia scopulorum*
Jones. Rocky slope. Cor. deep
pink, its lobes apiculate. Leaves
bipinnatifid, the hairs weak,
rather long, glandular.

No. 19,780. *Scrophularium*
Sepals sky-blue, the
back with a thickened oblong
green spot just short of apex.
Lower petals bluish-shaded,
cleft half way into an ^{open} wedge-
shaped notch; upper petals
white, shortly notched. Lower petals
hairy on upper side; upper petals
glaucous. Shading shale slope.

Leaves fleshy a little. Individuals
mostly few and scattered.

No. 19,781. *Ellisia membranacea* Bth.

Rock ledge at foot of
slope on border of wash.

No. 19,782. *Mentzelia*

Stamens close to 50.

Stems very slender, weak. Plants
loosely ascending or decumbent.
Petals greenish yellow with a
transverse brown spot at base,
oblong-ovate, strongly parallel-
veined longitudinally!! Rocky ledge
at border of wash.

No. 19,783. *Cryptantha utahensis*
Greene. The *Cryptanthas* seem
very much diseased in the desert
and this lot may be. Wash.

192

Wash below Spr., - Shadscale Spr.,
Johnson Cañon, Panamint Range,
Inyo Co. Apr. 29, 1940, 3500 ft.

No. 19,784.

Rays short, white; disk
yellow. Rocky ledge, border of
wash.

No. 19,785. *Eschscholtzia*
minutiflora Wats.
Wash. Petals small, yellow

- A beautiful day! An ideal day
in the desert! The sky blue, - rarely
one or two stray white clouds
floating. A pleasant slightly
cool temperature. A light move-
ment of air that gently shakes
the leaves on the Cottonwood trees.
Occasionally the Black-headed
Towhee flashes through the mes-
quite bushes; sometimes there is
the call of Mountain Quail,
and frequently the mourning
whistle of the dove. It is a rare
and wondrous spot in the desert.

Cliffs west of Shadscale Spr.,

Johnson Cañon, Panamint Range,
4500 ft. Apr. 30, 1940

193

No. 19,786. *Buckelia arguta* Rob.
Bush 1 1/2 ft. E. Rocky
cliff.

No. 19,787. *Tetradymia* ^{*axillaris* A. N. S. & A.} ~~*spinescens*~~
2 ft. h. Cor. yellow. Rocky cliff.

No. 19,788. *Glycythamnus nan-*
seus (Pall.) Britt. var. ?

See p. 196. Young (new) leaves
sticky. Rocky slope.

No. 19,789. *Gilia gilmanii* Jepson.
In ^{rock} seeps on face of
cliffs. Perennial! Only dead stems.

- On first arriving here and estab-
lishing camp at Shadscale Spring
in Johnson Cañon, I made a botani-
cal work place under a little
cluster of Black Willow trees on
the bank of the wash. My tent
was rigged up to protect the stage
of my microscope from any wind
movement. The microscope stands

on a bench made of 2 x 6 inch pine planks 6 ft. long that miners have brought in here for some purpose, then being rigged up on a gasoline drum and rock wall for supports. All this did excellently for a few days but the wind got too high and it became necessary to find a place where the tent could be stretched. I go up the hill 60 yards to a cluster of Cottonwood trees and set up the tent and re-make my ^{work} bench out of the pine planks. Here I change drawers free from the wind; write up field book notes and make dissections. I feel most happily situated: a most desirable living spot in the desert; running water and the shade of trees; all about the washes and cañon slopes with

Apr. 30, 1940.

a multitude of localized plant-plants found in 20 square feet - say and not again found during our whole stay. It is all so delightful I feel as if a stay of a month or six weeks would not be too much.

In the work at Shadscale Spring the common bushes are *Baccharis sergiloides*, *Chrysanthamnus* (no. 19,660), *Viguiera* (no. 19,662), and especially the composite bush no. 19,636 with its dark green broadish leaves in fascicles at end of branchlets (this abundant in cañon bed). One-eighth mile or so further down the cañon bed this latter composite is replaced by a somewhat similar composite (no. 19,768) whose narrow bright but dark green leaves make heavy clusters at the tops of the erect branchlets. This composite is very abundant in

the broad wash for about three miles. With it is the common *Argemone* (#19,769) and *Datura* (#19,774), the foliage of which is remarkably dark green, I mean as you look at the plants 2 to 3 ft. h. in the wash.

Out on the dry arid slopes the dominant bushes are no. 19,788, *Salazaria mexicana*, *Ephedra* (no. 19,656 to 19,658), *Gutierrezia* (no. 19,761) *Larrea tridentata*, composite (no. 19,773), *Babbia* (no. 19,652)

3000 ft.

No. 19,790. *Dalea*

3500 ft. Low spreading shrub
4 ft. broad and 12 to 15 in. h.
Wash. Lower Johnson Cañon.

No. 19,791. *Julia latifolia* Wats.
3000 ft. Lower Johnson Cañon. In

Apr. 30, 1940

the field, the corollas (red) seem very close to those of *Julia scopulorum* in shape, size, color.

- *Plantago*

Abundant on the mesa, lower Johnson Cañon. This is no. 19,858, see p. 197. ²²⁵ 3000 ft.

- So we return to Furnace Creek, we pass over the mesa bordering lower Johnson Cañon. For miles up Death Valley, down Death Valley the broad salt floor presents a spectacle so singular as to stir in one's thoughts strange images. Southward, at the southwesterly end of Death Valley, the view closed by the tan-colored Owl's Head Mountains, while far out at the southeasterly end of the valley there rises a bold range, rugged and lofty. It

seems familiar as to position and I suspect it is the Arrowood Mountains where I was in 1935. I inquire of Gilman and he confirms my conjecture. We arrive back at National Park Headquarters and I am given ^{living} quarters in the guest house.

— All my life it has been my practice to be in the field botanizing on May 1. Partly because, wishing to be abroad during all April but prevented by official duties, I resolved not to suffer delay beyond May 1. Partly, also, because of a boyhood sentiment in regard to May Day.

So today, May Day, finding myself here in (Cont. p. 200)

May 1, 1940

Headquarters Springs, Death Valley
— 100 ft.

"No. 19,792. *Juncus cooperi* Engelm.
Stems erect, in a dense mass, forming a rounded clump 4 to 4½ ft. high. On a hillside in a saline spot, so heavy with white salt as to support almost no vegetation — the soil soft under foot. See p. 145.

"No. 19,793. *Psathyrotes ramosissima* (Torr.) Gray. This composite with its small rayless heads, yellow flowers and silvery foliage forms a low mound 4 to 6 in. h. and ¾ to 1½ ft. broad. Wash. Cont. p. 205.

"No. 19,794. *Phragmites communis* Trin.
This reed grows in the Arrowood Swamp; 7 to 8 ft. h.

"No. 19,795. *Pluchea sericea* (Nutt.) Cov.
Forms a colony of

4 or 5 acres in the cañon just above Park Headquarters; almost pure stand. Some mesquite (*Prosopis juliflora* var. *glandulosa*) on its borders.

- Cont. from p. 198. Death Valley, I walk up the little cañon behind the Park Headquarters and collect *Pluchea sericea* and a few other things (nos. 19,792 to 19,795). What a strange contrast between this desert scene and its salt-spot vegetation and the rich green hills and flowery slopes of the Coast Ranges where usually my May Days have been passed in the open!

- *Gilia aggregata* var. *bridgesii* Gray on Telescope Peak says Filman.

"No. 19,796.

Johnson Cañon Composite shrub. Cont. p. 189.

No. 19,797. *Populus*

See p. 136. Trees at

"No. 19,798. *Delphinium*

Spr.,
Johnson Cañon.

see bottom p. 173. Johnson Cañon.

"No. 19,799. *Thelypodium*

See p. 106.

"No. 19,800. *Galium*

See p. 115. Johnson Cañon

(May 2,
- This evening, after dinner at 5:00 o'clock at Park Headquarters, I went down to Furnace Creek ranch for gasoline and oil for the car. The sun had set for the valley floor and for some of the higher terrain, but the evening lights were very fine. The ranges stood in glory, as if magnificently exalted by purple and violet atmospheres. It was a rare spectacle because the mountain masses

seem lifted as well as gloriously colored by the glamour of delicate hues.

- *Clematis*

At Hungry Hills, Cañon bottom, forming thickets in some spots

- *Pericoma candata* Gray in Hanam-pah Cañon says M. F. Gilman.

- *Tetrococcus ilicifolius* in Panamint Range, says M. F. Gilman.

- *Martonia utahensis*

Grows in same cañons in Funeral and Grapevine ranges

Tetrococcus ilicifolius says Gilman

- *Cuscuta utahensis* in Butte Valley

- in Panamint Range, in Travertine Cañon in Furnace Creek says Gilman.

- F. V. Coville, M. French Gilman went about with him in the field. He says Coville did not drink,

smoke or swear. Told me anecdote of being at some place in the desert where a young woman offered Coville a cigarette. The expression on Coville's face was a study, says Gilman. As to swear words, I happen to know Coville is occasionally profane, offensively profane.

- *Calochortis Kennedyi* in Johnson Cañon ^{vol. 2}

- *Melilotus officinalis* in Death Valley says Gilman.

- *Nicotiana* (no. 19,625)

Grows in wash; also base of rock cliff at Hungry Hills.

- *Petrophytum cooperianum* in Johnson Cañon says Gilman.

- *Salvia funerea* cont. from p. 224, that is no. 19,852. Cor-lobes oblong or elliptic, saw the middle lobe of lower lip which is dilated and larger than the rest. Lobs ciliate. The calyces are globose pellets of wool!!! and are very remarkable!! Often the term "tomentum" is strained, but here is real wool! This

is a case of loose fluffy wool!
The bracts are broadly ovate, acute,
cuspitate, densely and closely
woolly.

- *Glossopetalon spinescens* no. 19,855.
Sep. 225. Densely and intricately and
divaricately branched with slender
spine-like branches. Stamens 7, 8,
disk in calyx very evident, the
filaments inserted beneath it.
The androecium is variable. Stamens
sometimes 5 and opp. the calyx-
lobes, sometimes 6*, always with
one or more semi-obsolete filaments.
Disk obtusely 5-lobed. The Manual
says "8 to 10-lobed", but ^{the disk in} this material
seems definitely 5-lobed.

* the 6th being in an alternate position
of course, as any other extra ones.

- *Psathyrotes* (no. 19,793), cont. from p.
199. Outer bracts of invol. markedly
spreading at tip, densely woolly, inner
bracts of invol. membranous margined, ^{dark} ~~dark~~
hairy on back and ciliate. Cor. lobes
short-velvety. Pappus - bristles numerous,
not scabrous as seen under my
doubled - dissecting lenses.

* ^{dark} green and globose inside.

Receptacle flattish. Peduncles curved
at maturity.

- *Viguiera reticulata* no. 19,853.
cont. from p. 225. Note on paleaceous
margin of achene in correction of note
previously written. Paleae joining the
2 aune broad and short, laciniately
fringed, sometimes so deeply cleft as
to make the paleae on either side
appear like 2 or 3. Inner bracts of
receptacle keeled, 3 or 4-ribbed as
seen from the outside. The ribbing

is not very prominent. Margins of flattened achene white-ciliate.

— Immediately after breakfast at the mess hall of the Civilian Conservation Corps at Park Headquarters in Death Valley, this Friday morning, May 3, Mr. Gilman and I in my car drive north to Beatty Junction and take the road to Daylight Pass.

As soon as we gain altitude the flowering begins and becomes very interesting all through the pass.

In the pass, using the term for all the high country, I collect nos. 19,801 to 19,819. Just easterly from the checking station, the *Stanleya pinnata* plants are

very fine and endure greatly the desert slopes. On a little hill slope $\frac{1}{4}$ mile easterly from the checking station are scattered white spots representing plants of *Polygala spinosa* - white because of the implex of dead intertwined thorns of last years growth.

We drive on, ^{by paved road,} far out on the Amargosa Desert on the road to Rhyolite and then suddenly fork back on a dirt road towards the foothills of the Grapevine Mts.

Within about a mile of the foothills, on the flat, are collected nos. 19,820 to 19,822, ^{and 19,857.} We go on and enter the foothills by a wash. Here I collect splendid plants of *Lithospermum* (19,823). Cont. p. 212.

No. 19,801. *Chorizanthe*Hard dry gravelly
ground.No. 19,802. *Chaenactis*Common on dry gravelly
mesas. Also common all
through the lower Johnson Cañon
hills and tilted mesa below it.No. 19,803. *Wentelia*

Dry gravelly mesas.

No. 19,804. *Plantago*

Dry gravelly flats.

No. 19,805. *Calycoseris wrightii*Ligules pure white in-
side. Sandy gravelly flatsNo. 19,806. *Cryptantha nevadensis*

Nels. & Ken. With 19,805.

No. 19,807. *Cryptantha utahensis*

Greene. With 19,805.

No. 19,808. *Cryptantha maritima* ^{var.}
pilosa Jtn. With 19,805.

May 3, 1940.

No. 19,809. *Cryptantha pterocarya* (Torr.)
Greene. With 19,805.No. 19,810. *Malacothrix glabrata*
With its large yellowheads produced in abundance
this is a showy and common
plant all along our route. Sandy
gravelly ground. 3500 ft.No. 19,811. *Frauseria dumosa* Gray ex
Torr.
Bush 1½ ft. h. Dry gravelly ground.No. 19,812. *Acanthopappus shockleyi*
3500 ft. Bush 1½ to 2 ft. h., very florif-
erous and showy, having the
tone of a somewhat devil-may-
care luxuriance on account
of its irregularly disposed
rays. Gravelly soil. Abundant.No. 19,813. *Cryptantha nevadensis* ^{Nels. & Ken.}
3500 ft. Weak stems. Gravelly soil.

"No. 19,814. *Stanleya pinnata* (Pursh) Britt.
 Splendid plants with 2 or 3 to 7 or 8 fine plumes rising above the woody base.

"No. 19,815. *Oenothera*

Stems several from base; sandy soil.

"No. 19,816. *Calochortus*

Gland approximately a half-moon of dense short even (i.e., equal) processes, yellow, capping a broad purple band on claw of petal.

= *Ipomopsis*

"No. 19,817. *Gilia polycladon* Torr.

Sunny gravelly slopes.

"No. 19,818. *Ericameria*

Broad low bush 1 to 1½

ft. h. Gravelly slopes.

"No. 19,819. *Polygala*^{sub} *spinosa* Wats.

Calyx pink; lateral sepals large, spreading; 2 upper

sepals and 1 lower sepal small. Two lower petals narrow, yellowish with purple tips*; upper petal developed above into a rounded hood compressed sidewise and enclosing the stamens and style; above the hood is produced a curved horn-like process. Sandy-gravelly steep slope, the root-crown very deeply seated, becoming more deeply seated by sliding talus sand and gravel. These plants, small shrubs, make, in their scattered colony, little white spots on the hillslope just below (east) checking station at Daylight Pass.

* The petals are dilated at apex into suborbicular dilations! Not obviously notched; not cleft.

- Cont. from Bottom p. 207. Also
five plants of

no. 19,825.

We climb through Mt foothills
and collect no. 19,826.

Cont. p. 214.

- cont. from p. 165 -

[A man, Englishman, named John-
son, raised vegetables at the point
called Hungry Bills in the Boom
days for the miners at Panamint City.
Gilman also says, Harrisburg. Later,
the Indian, Hungry Bill, acted as a
scout for the government in the
Modoc War. It is said that as a
reward the government gave him
the flat in Johnson Canon marked
on the map as Hungry Bills. Hun-
gry Bill had a son-in-law. I
think Gilman (W. F.) spoke of him
as Bill (William ^{or Tom}). He is still
living. At the time of my being
at Furnace Creek.]

(Part Headquarters he
was somewhere up in)

Cont. p. 259.

No. 19,820. *Gilia* ^{major Day & Grant} ~~neocomplicita Dougl.~~

Cor. white; stamens on very
short filaments inserted in cor.-

sinuses, half as long as cor.-
lobes. Sandy flats. Amargosa ^{Desert}

- *Cryptantha*

See 19,857.

No. 19,821. *Pectocarya setosa* Gray.

See p. 207. Sandy flats, Amargosa ^{Desert}

No. 19,822. *Menodora spinescens*
Gray. Amargosa Desert. Gravelly flat.

No. 19,823. *Gilia latiflora* Gray,
Gilia cana Jones ssp. *speciosa* (Tops.)
A. + V. Grant

Stamens on very short fila-
ments inserted in throat, but only
about $\frac{1}{3}$ as long as cor.-sinuses, therefore
exserted from
cor.-lobes. Sandy flats. Cor.
reddish-purple; throat yellowish;
tube dark purple. Wash.

No. 19,824. *Astragalus*

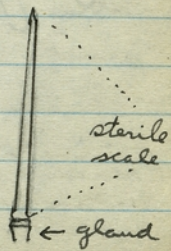
Stems many from base, de-
cumbent. Cor.-purple. Wash.

- No. 19,825. *Malacothrix glauca*
See p. 212. glorious colonies of
this yellow composite in the wash.
(Considerable ^{leaves} part of spec. cut away.)
No. 19,826. *Phlox stansburyi* Hel.
Cor. red-pink; also
white!! Gravelly flat. Gilman
called this *P. grayi*.

- Cont. from p. 212. We climb
over a ridge, a lateral spur
of the Graepine Mts. and then
down a long distance and
then up from the cañon along
a precipitous eastern side to the
summit of the divide of the
Graepine Mts. In the pass, I
collect nos. 19,827 and 19,828.

From this point is a most awe-
inspiring view of the great hollow
at head of Titus Cañon (Cont. p. 219)

- No. 19,827. *Astriflex confertiflora*
Wats. Rocky hill slope, right
in pass at head of Titus Cañon.
Bush 3 ft. h., rounded, dense.
No. 19,828. *Hecastocleia shockleyi*
Gray. Rounded bush 3 ft. h. Head
of Titus Cañon in pass.
No. 19,829. *Hymenoclea salsola* T. & G.
Leadfield. Head of Titus Cañon, flat.
No. 19,830. *Leptodactylon pun.* ^(above large on side)
gens *Bth.* var. ^{Gilman's grass} Cor. yellow. With 19,829.
No. 19,831. *Scopulophila rixfordii* (Gray) ^{n. sp.}
The fig. in Man. is very fair.
The lanceolate scales are straight;
the glands at base are not "red"
but faintly greenish.
Calyx lobes elliptic, with
a central oblong ^{membranous,} green
herbaceous spot.
This grows on the
rocky cliffs of the cañon



at Leadfield, head of Titus Canyon.

The woody base of the plant is most remarkable, 4 to 5 inches broad and solidly or almost solidly woody!! It is common to find various desert or alpine plants with a densely branched or thickly interwoven root-crown; but this is more like the heavy base of some trees, like an Oak or Madroño. I consider it most astonishing. The herbaceous stems die back completely each year though the basal internodes may persist over another as dead stalks. Or again several lengths of internodes may persist as "dead straws."

- Cont. from p. 244 seq. Southeast of Fresno three or four hills, rather bold ones, lie a bit isolated on the plain but close to the Sierra foothills proper. They should be surveyed.

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No. 19,832. *Lonicera*

Shrub 3 ft. h. Rocky cliffs. Stamens with very short filaments inserted in throat, the anthers about 4 times as long as the filaments. Cor. red.

No. 19,833. *Brickellia desertorum* Cov.

This composite on face of rocky cliff. Warm aromatic odor to herbage.

No. 19,834. *Dichelostemma multiflorum* (Bth.) Heller

Staminodia with long slender somewhat curving appendages. Base of cliff in loamy gravelly spot.

No. 19,835. *Pentstemon monensis* Hel.

Cor. crimson, its lobes of same size and shape. Sterile filament with a dense brush of yellow hairs on one side at apex. Face of rocky cliffs. Palate low or

Cañon near Leadfield, head
of Tinto Cañon, Grapewine Mts.
(see p. 226) 5500 ft.

obscure, with a few scattered
hairs on it. Stamens glab. Stems
few from exceedingly thick woody
root-crowns; not branched root-
crown, but solid, like an oak
or some similar base.

- "No. 19,836. *Fraxinus* aff. *anomala* Torr.
Small trees on the cliffs
4 to 8 feet high.

- "No. 19,837. *Hofmeisteria plurisetata* Gray

This composite grew in a
seam in the face of the rocky
cliff and its branches were
pendulous. The growth of previous
years' season lay ^{dead} beneath this
season's shoots and the layers
next the rock were compacted
with age and seemed as if they
might be 20 or 30 years old. The

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spectacle of this plant growing in this
way was to me most interesting
and, since it was only in leafage
at this time, I would not have
disturbed so interesting an
example, ^{a solitary individual,} but my companion took
it from its place and I made
a spec. of a portion of it! —
throwing the rest away.

- "No. 19,838. *Poa scabrella* (Thurb.) Benth. ex Vasey
Grass at foot of cliff on talus
in spot of soil. With 19,834.

— Cont. from bottom p. 214 and the
great mountain barriers about it. At
the distance is a high peak dominat-
ing the terrain by its stature rather
than its bulk; next nearer a
great mountain mass, wonder-
ful for bulk, its various strata
and colorations; nearer still
another highly (cont. p. 226)

"No. 19,839. *Phacelia*

Fleshy. Wash.

Cor. purple. Leadfield,
above head of Titus Cañon proper."No. 19,840. *Tetradymia* ^{*axillaris* A. Nels.}
~~*apiculata*~~

Cor. yellow Rocky flat. Leadfield.

"No. 19,841. *Ericameria*Bush $\frac{3}{4}$ to $1\frac{1}{4}$ ft. h. Rocky flat. Leadfield."No. 19,842. *Maurandia petrophila* Cov.
& Mort. Cor. white, its lobesabout the same size and shape
except the middle lobe of lower
lip which is smaller and
with a narrower base than the
other lobes. Throat with a
pair of yellow ridges which
run out onto palate, diverging a
little upward. Cor.-tube proper very
short, $1\frac{1}{2}$ lines long; throat about
8 lines long. Upper pair stamens
the shorter; longer stamens about

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 $\frac{1}{2}$ as long as corolla. Corolla with
a distinct tint of cream on the
white. Crevices of rocks on cliffs,
often in deeply shaded places."No. 19,843. *Antoniecon merriamii* Cov.

Cor. white. Sandy wash.

"No. 19,844. *Scamptopappus shock-*
leyi Gray. Leadfield."No. 19,845. *Galium*— *Eriogonum interfractum*
with no. 19,842. See p. 244.

no. 19,900.

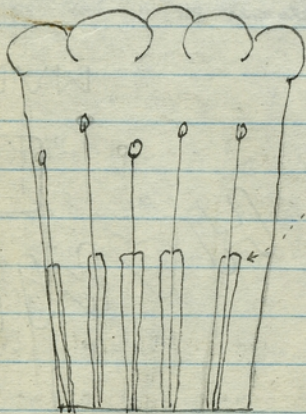
"No. 19,846. *Mimulus ruficola* Cov. &
Grant. Faces of rocky cliffs. In
my belief perennial. Cor. pink,
its lobes quadratish, all the same
size and shape. Throat with a
couple of folds running out onto pal-
ate the furrow betw. the folds with
minute and very short spreading
hairs, the hairs a little gland-

Side Cañon near head of Titus
Cañon, Graepine Mts., Pinal Co.
Near Klare Spr.

ular. Throat yellow. Root crown
thick. Vestiges of last years
stems in some cases.

No. 19,847. *Anemone tuberosa* Rydb.
Rocky cliffs.

No. 19,848. *Phacelia mustelina* Cov.
cor. pink, tubular, but enlarged
upward.



Scales attached
to corolla, free
on opp. side.
Scales wholly
adnate, attached
to filaments
only at base.

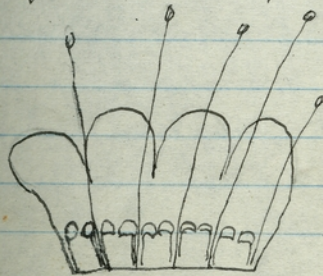
Scales narrow, rather narrower than
shown in diagram, gradually and

5000 ft. May 3, 1940.

slightly enlarged or widened upward,
at the apex abruptly truncatish.
Rocky slope.

(var. *funerea* Voss.)

No. 19,849. *Phacelia crenulata* Torr.
Bushy branching, 3 ft. h. or
simple and unbranched or nearly, 1
to 2 feet h. Wash, Titus Cañon.



Cor. purple, cleft rather deeply into
lobes which seem a little irregular
or exornate as to margin. Scales
forming pairs of hoods between the
filaments drawn down to a narrow
border with runs to base of fil-

aments. Herbage extremely glandular. Leaves very dark.

*No. 19,850. *Phacelia rotundifolia* Torr.

Wash. Cor. white, tubular-campanulate. Stamens inserted at base of tube, $\frac{2}{3}$ as long as corolla. Scales obsolete or 2 filaments with a pair of reduced scales, the scales very narrow, wholly adnate from base, narrowed upward and soon disappearing above.

*No. 19,851. *Phacelia*

Wash. Cor. purple.

*No. 19,852. *Salvia funerea* Jones.
See p. 203. Rocky cliffs.

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3000 ft.

*No. 19,853. *Viguiera reticulata* Wats.
See p. 205. Colonies at foot of cliff in wash, Litus Cañon.

*No. 19,854. *Boerhaavia annulata* Cov.
Mesa at mouth of Litus Cañon. Plants 4 ft. h. 1200 ft.

*No. 19,855. *Glossopetalum spinescens* Gray. See p. 204. Rock cliffs, head of Litus Cañon. 5000 ft.

*No. 19,856. *Cryptantha racemosa* (Wats. Greene)
3000 ft. Middle of Litus Cañon.

*No. 19,857. *Cryptantha* ^{*circumscissa*} _{3m.}
Amargosa desert. With no. 19,821. See p. 207. See p. 213.

*No. 19,858. *Plantago*
See p. 197.

— *Astragalus* no. 19,865. Nearly all the perennial species of *Astragalus* seem exceptionally infected with gubs in the inflorescence. Could this fact be related to the scarcity of many perennials in this genus?

- Cut from bottom p. 219
interesting but smaller mount-
ain mass. We descend by
a narrow treacherous way
to the hollow called Lead-
field with a few prospectors'
cabins. We camp at a forlorn
(^{deserted} cabin), make a hot mid-day
meal and go ^(on foot) up a narrow
canyon ^{0.5 mile from top of lead field} where there is much
rock work to ascend it and
find many remarkable rock
plants on its cliff walls such
as *Scrophularia virifolia* (19,831),
Pentstemon calcaratus (19,835),
Fraxinus (19,836), *Lonicera* (19,832).
Nos. 19,831 to 19,838 were all
collected in this narrow
gorge. Thence we returned to
camp, resumed the road down
through the great hollow and

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the close narrows of
entered Titus Cañon proper. Within
 $\frac{1}{2}$ mile about we stop to explore a
side cañon at right and here find
most marvelous plants on the cliffs:
Lawsonia no. 19,842, *Mimulus*
ruficola no. 19,846, *Quercus* no.
19,847, ^{*glaberrima* (no. 19,855)} *Phacelia* *unimulata* no. 19,846.
Nos. 19,842 to 19,849 were collected
in this side cañon as in near by main cañon.
- *Eucalyptus* *urens* (no. 7. Magnifi-
cent plants in wash of Johnson Cañon
458 feet broad, 2 ^{to 2 1/2} ft. h., displaying
200 to 500 closely ranked flowers!
Also on the rock cliffs, large plants
ornamenting the walls.
- *Ammobroma sonora* Torr. In
the Colorado Desert. The common
host of this species is *Coldenia*
plicata, a very distinct species flat on
ground. Our findings were published in
U.S. Dept. Agr. Yearbook in 1930 or 1935."
- M. F. Gilman

- We did not see any signs of Mountain Sheep about any of the springs in the Johnson Cañon country. They prefer to water at seepages says M. H. Gilman. They do not like burros, and the presence of burros drives them out of a country.

- Desert men. Shorty Harris. His grave with a monument is down the valley from Furnace Creek. One of his old-time pals and that of "Scotty" was Johnny Miller. He located a mine at Rhyolite, sold it for \$20,000 or say, bought two barrels of whiskey, knocked in the head of one and with a tin dipper invited everyone in Rhyolite, every miner, to come and drink. Most of them did. Into the second

barrel he broke six dozen eggs and offered egg-nogg to the crowd. A supervisor from the desert in Inyo Co. was Brown, from Independence, the County Seat, he went to Sacramento as Senator. He married the daughter of Dad Fairbanks, a contemporary and friend of Shorty Harris. He lives now at Baker where he has, or has run, a gasoline station.

Johnson, the partner of Death Valley Scotty is the man who built and paid for Scotty's Castle in the Grapevine Mts. He made his money in real estate and finance at Los Angeles and was at one time rated very high in Bradstreets. He is still living and spends the winters with his wife at the castle.

Up at 4:00 o'clock this morning, I bid good-bye to M. F. Gibman, who has done so much for me in the valley, and take the road. With great effort yesterday I had all day, and the day before, worked on my collections and on the records. Well into last night I continued packing, until the car was full and ready.

As I drive up the valley floor the whitish Cottonwood Mountains stand up strangely in the early morning. This is the local name here for the Pinto Range of the maps. Tin Mountain is the most prominent landmark in the Cottonwood Mts.

No. 19,859. *Eriogonum nidularium*
Cov. Toumes Pass. 5200 ft.

No. 19,860. *Chorizanthe brevicauda*
Makes marked
yellow-colored colonies on the dry
gravelly flats. Toumes Pass. 5200 ft.

No. 19,861. *Chaenactis*
5200 ft. Toumes Pass. All over this region
and into Daylight Pass and south to
Johnson Canyon I find this the
most common annual, perhaps
the most common of all herb-
aceous species in the desert.

No. 19,862. *Acanthopappus shockleyi*
Dry gravelly flats.
Toumes Pass.

No. 19,863. *Eriogonum trichopes*
Argus Range, above Pana-
mit Spr. On the great mesas
and plateau slopes of the Argus
Range with their broken igneous

rock-strewn surface, this species yellows the country for many square miles! forming rather dense colonies (for the desert) but the plant so slender and thin that the yellowing effect comes from the minute but multitudinous flowers.

"No. 19,864. *Striflex confertifolia*
 Centennial flat. Plateau country of Argus Range above Panamint Sprs., covering thousands and thousands of acres with a spaced even stand 10 to 14 in. h. mostly.

"No. 19,865. *Astragalus*
 Centennial flat. With no. 19,864.

Banner purple, sides reflexed, the center with a quadratish white spot which is finely

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purple-lined. Tips of keel and wings white. Stems many, decumbent from the central root-crown and forming a loose circular mat. (Cont. p. 225).

— As I ^{climb out of the Panamint Valley} ascend the east wall of the Argus Range to the plateau country there appears at one point in full view a prospect of a desert valley trough lying at west foot of Argus Range southerly-broken, ghostly, incredibly remote and hopeless and inaccessible. See p. 261.

I go on. Pass the fork of the road to Saline Valley (north) and in time come out into Owens Valley. *Sarcobatus vermiculatus*, abundant on S. shore flats of lake. Bright green bushes 3 to 4 ft. h., 5 to 8 ft. broad.

At Olancha I take on gasoline, water and oil and drive south.

"No. 19,866. *Mirabilis*

sep. 235. Forms circular mounds $3\frac{1}{2}$ to $4\frac{1}{2}$ feet broad and $1\frac{1}{2}$ feet high, prodigiously covered with large crimson flowers. Sandy flats. Olancha, 3 mi. s.

"No. 19,867. *Baileya*

With 19,866.

"No. 19,868. *Lessingia germanorum* var. *lemmonii* (Gray)

J.T. Howell. This tiny composite with yellow flowers, with 19,866.

- I drive on south past Little Lake and past Dunsmuir to Freeman jet. where I take on gasoline and water. Then I turn the car towards Walker Pass.

All the way up into Walker Pass the grade is astonishingly easy and regular! and the pass low!

On the east slope, about 2 mi. from the pass, I collect:

"No. 19,869. *Langloisia matthewsii* (Gray). Cor. pink-red. Upper lobes 3-furled minutely but distinctly, bearing white pattern below with pink arches above the pattern.

†dark. Three lobes in upper lip, 2 (spreading) in lower, or sometimes $\frac{4}{5}$. Sandy flat.

"No. 19,870. *Cryptantha circumscissa* (H. & A.) Jtn. With 19,869.

"No. 19,871. *Haplophragma linearifolium* var. *interior* (Gray) Jones. This composite shrub 1 to $1\frac{1}{4}$ ft. h., $1\frac{1}{2}$ - 2 ft. broad.

- *Mirabilis* (no. 19,866). The fls. shrivel badly in drying and lose their large fine shape.

5248 ft. = summit. May 6, 1940.

- In the pass there is an historical monument commemorating the early use of the pass, indicating it was first used by Joseph Ruddeford Walker in 1835. (It is 5 mi. on the contour map from Walker Pass to Fireman jet., apparently no more than 6 mi. by road.)

5000 ft., nos. 19,872-19,875.

"No. 19,872. *Cryptantha circumscissa*
Sandy flat, about
1 mile east of pass.

"No. 19,873.

This low as if prostrate composite, with 19,872.

Bushy flat, in opens.

"No. 19,874. *Linanthus aureus* (Nutt.) Greene. Cor. yellow. Stamens on very short filaments inserted in sinuses. With 19,872.

"No. 19,875. *Haplophragma linearifolium* DC.
With 19,872. Showy yellow rays,

5248 ft. = summit.

Kern Co.

extremely glandular herbage!
Abundant, 1 mi. e. of pass.

"No. 19,876. *Salvia* ^{*Dorrii* ssp. *argentea*} ~~*canadensis* Dougl.~~

With 19,872. This and 19,875 the two most common bushes that are in flower. 5000 ft.

"No. 19,877. *Gilia latifolia* Gray, ^{*brecciarum* Jones ssp. *neglecta*} ^{A. + V. *Giant*}

~~small-flowered form~~, with whitish throat. to ^{the} purple ^{limb of} corolla.

Sandy flat directly in pass at monument.

"No. 19,878. *Purshia glandulosa* Curran.

This flowering shrub crowded all over with its white roseaceous flowers makes a striking sight about 1 mi. w. of pass where a half-dozen shrubs, 4 to 4½ ft. h. are found. Shrub, in general aspect, remarkably like *Covania mexicana*, when in full flower.

Walker Pass, May 6, 1940, 5150 ft.
one mile W. (nos. 19,878-19,881).
4800 ft. Kern Co.

"No. 19,879. *Ceanothus*

"No. 19,880. *Salix*

Bushy, 6-8 ft. h. In
cañon bottom.

"No. 19,881. *Salix*

Round-headed
oak-like trees, trunk 2 ft.
diam. at 1 ft. from ground.
Cañon bottom. 25 ft. h.
Canebrake Creek, upper.

"No. 19,882. *Eriophyllum*

Canebrake Creek, near Jocks

- In Walker Pass is a monument to
the early explorers who used the
pass - Walker (Joseph Reddeford) being
the first (1835). The east side of the
pass is strictly desert in aspect and
in plant cover, the west slope likewise
- at least as far Oryx or nearly,
with a considerable desert forest
west to the Greenhorn Mts. and Kern Cañon.

Oryx, Kern Co., May 6, 1940.
2750 ft. near Weldon.

"No. 19,883. *Eurodymia* ^{axillaris A. Nels.} ~~sp. nov.~~
6 ft. h., 8 ft. broad.

"No. 19,884. *Fremontia californica*
Torrey. Rounded shrub 12 ft. h.

Marvelously covered with flowers.

- On the east side of Walker Pass there
is an abundance of *Yucca brevifolia*
and also on west side - many miles
of it. *Juniperus californica* is a common
species on west side. Also the desert
Chrysothamnus on both sides of the
pass. *Artemisia tridentata* on west
side! (common). I travel from the pass
to Jocks station along Canebrake Creek
into Weldon Valley, down which, westerly,
Canebrake Creek flows. This is an east
and west valley. Next one comes to the
point where the South Fork Kern River
comes in from the north through a
great cañon. At this point is
Gloomfield ranch on the valley
floor. A mile or two further along
one looks westerly down the
South Fork Valley in (Cont. p. 243).

- "No. 19,885. *Haplopappus linearifolius* DC. Composite shrub.
= *C. nevadensis* var. *rigida*
"No. 19,886. *Cryptantha intermedia*
Greene, var. *rigida* Brand.

- *Pinus sabiniana* Druel. comes ^{in at} ^{2400 ft.}
— *Salvia columbaria* Bth. Bodfish.
— *Cumtula foetidissima* HBK. At
Onyx, see p. 239. Valley flat.

- "No. 19,887. *Pentstemon*
upper lip oblong,
notched, curved forward over
throat, or over-arched, pink-
ish. 3 lower lobes equal, same
size and shape, spreading
parallel, dull white. Filaments
short hairy at base. Style glab.
sterile filament short, glab.

Bush 3 $\frac{1}{2}$ ft. h., 8 ft. broad. Rocks.
(to 4)

- "No. 19,888. *Pentstemon grinnellii*
Eastw. Bush 1 $\frac{1}{2}$ to 5 ft. h. with

- many erect stems erectly branching
above (season's shoots) from a
woody base. Lobes upper lip
short, broad, recurved; 3 lobes
lower lip alike, equal, spreading
downward a little. Cor. crimson
inside on upper side of lobes, pink
outside. Very floriferous. Cor. tube
contracted at summit of short tube
below throat. Sterile stamens
(glab., style) (densely hairy at apex).
long-

- "No. 19,889. *Cirsium*
Stems erect, 4 to 6 ft. h.,
branching above (panicle) or from
near base. Flo. red. Wooded
rocky mt. slope.

- Haplopappus*
"No. 19,890. ~~*Sanicula*~~ *linearifolius* DC.
Composite bush. 4 ft. h.
[3 $\frac{1}{2}$ to,

"No. 19,891. *Eriophyllum*One of the shrubby
plants in the openly wood-
ed country."No. 19,892. *Minimus aurantiacus*
(Curtis). Bushes extremelyglomerous and shrubby with
theri. pale yellow flowers—
gracing the rocky mountain
side."No. 19,893. *Pentstemon* ^{*laetus* Gray}
~~*laetus*~~ var. *laetus*
~~*laetus*~~ Cor. purple; stamens,
sterile stamen, style all glab."No. 19,894. *Linanthus montanus*
Greene. Cor. pink, shrubby.
In colonies on steep slope.
Stamens inserted in lower part of
throat, the anthers just ex-
serted from throat. Stigma in

throat. Democrat Springs.

"No. 19,895.

Composite Bush with
very shrubby broad canary-yel-
low rays. Democrat Sprs."No. 19,896. *Phacelia calycosa* (Gray).
Democrat Sprs. Cor.; dull yellow."No. 19,897. *Juniper californica* Wats.
Dense bushes 6 to 12 ft. h., forming
dark spots on naked hillsides.
Weldon; see p. 161. 2600 ft.(Cont. from p. 239 at bottom.)
which Oryx and Weldon (hamlets)
are situated. It is a remarkable view.
Here is a great cañon with rather
abrupt walls, its bottom filled by
crimson material to a floodplain
level of about 2700 feet, forming
a warren cañon floor and filled
with round-headed oak-like trees
from side to side, in (Cont. p. 250).

near Vanden. Southwest of Vanden one mile I note a playa (about one acre in extent) blue with this species, its margin with a narrow zone of *Baeria* (no. 19,901), outside the *Baeria* zone the green flowering field.

No. 19,903. *Larthenia*

Former shallow pool
bed margins.

No. 19,904. *Baeria*

Makes pure lakes of gold on the plain near Vanden in shallow former pondlets or playas.

No. 19,905. *Allocaarya greenii*
(Gray) Greene. This *Boraginaceae*

slender-stemmed plant is common in a field sw. of Vanden, on the plain; but is not noticeable - being masked by the grass and other vegetation.

No. 19,906. *Deschampsia darthoides* (Trin.)
Munro ex Benth.

This grass with 19,902.
Hill s. (1 mi.) of East Clark's Dover School (1 mi. nw.)
and st. Sid Clark's Valley, s. of Lagoon Valley,
Vaca Mts.
No. 19,907. *Senecio* May 10, '40.

Low spot at foot of hill south of East Clark's Gasline sta., in Sid Clark's Valley, south of Lagoon Valley, Vaca Mts.

No. 19,908. *Trifolium ciliolatum* Benth.

Hill s. of East Clark's Gasline sta. in Sid Clark's Valley, s. of Lagoon Valley, Solano Co.

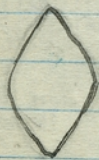
No. 19,909. *Wyethia angustifolia* Nutt.
with 19,905. Rays yellow.

Over School (hill 1 mi. nw. of)
in Sid Clark Valley, 2. of Lagom
Valley, Solano Co., May 10, 1940.

10. Bracts exceeding the body of
the achene. ^{↑ of the receptacle}

Pappus: 2 broadly subulate pappi
at opp. angles, the intervening
paleae short ($\frac{1}{4}$ to $\frac{1}{2}$ as long).

Bracts of invol. about 12 to 17.



Achenes broadly
diamond-shaped
in X-sect. distin-
ctly 4-sided!!

Bracts of invol. much surpass-
ing disk; or a little surpass-
ing disk. Herbage very finely
tomentose or villous.

Paleae a little united at base.

No. 19,910 *Wyeletia angustifolia*
^{of C. L. Nutt.}
See p. 261. Similar to 19,909 and
on same open grassy hill. Achenes

Vallejo, May 10, 1940.

seem smaller than 19,909; but in
both cases they are young.
Pappus consists of two subulate
awn about as long as cor-tube
and on angle opp. bract.

No. 19,911. *Amsinckia intermedia* (subtending
with preceding. embracing)
No. 19,912. *Asclepias mexicana* with 19,910.

Vallejo, May 10, 1940.

No. 19,913. *Vicia*

Colony. Annual. Cor.

red-purple. Valley flat. See p. 253.

No. 19,914. *Trifolium variegatum* Nutt.
Wet flat.

No. 19,915. *Trifolium elegantum*
Steud. Dry valley flat.

No. 19,916. *Brodiaea Hitchc.*

Its white flowers color
the valley flat over an area of
about 20 acres.

"No. 19,917. *Briza minor* L.
with 19,910. Valley flat.

- Cont. from bottom p. 243.

in vivid, almost impossible contrast to the treeless mountain sides, - the soft contours of the trees, their green heads and greener fields nestled at foot of mountains austere, rocky, open and defiant.

Remember there are broad-leaved trees - willows and Cottonwoods.

The willows are perhaps represented by my spm. (no. 19,881), the Cottonwood is doubtless

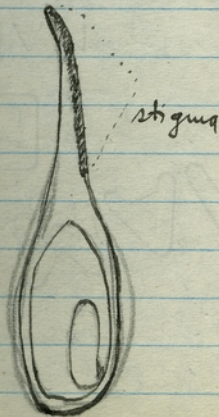
Populus fremontii. I rather doubt if there is just such another scene or setting in California as this. I drive on

westerly to Isabella on the main Kern River (coming down from the north) and turn southerly and enter the lower Kern Canion. This is an extremely winding and hard-to-drive road, on abrupt or broken cañon wall. It is a highly interesting road and offered excellent opportunity for botanizing - but one needs time for it.
- Cont. p. 244.

- *Purshia glandulosa* Curran, cont.
from p. 237 (no. 19,878).

Pistil 1.

Ovule 1,
attached
near
base



Style stigmatic
its entire
length or
nearly on one
side

- Cont. p. 256.

Calyx - lobes 2-

liptic, much rounded at apex.

"No. 19,918. *Juniperus osteosperma*
For locality and date see p. 167.

Vallejo, May 17, 1940

For itinerary see p. 257.

"No. 19,919. *Downingia*

Lower lip flat or flattish,
Cor. blue, a white ^{or "platform"} field on center
Lower lip with 2 obovate yellow
spots narrowed at base and
coloring yellow the 2 throat
folds. Lobes lower lip quad-
ratic, truncate and mucronate
at apex. Lobes upper lip
spreading and divergent. Calyx-
lobes spreading, in age rotate.

"No. 19,920. *Lupinus nanus* Dougl.

Cor. blue. Sides of banner
reflexed, the central part whitish

Vallejo, May 17, 1940

and purple-dotted, with a median
furrow. Acumen of keel rather
densely ciliate; wings large.
Whitish spot of banner soon
pink or lavender.

- *Vicia* cont. no. 19,910. Banner
crimson, larger (and longer) than
the wings which are purple. Keel
quite small, shorter than the
wings.

"No. 19,921. *Veronica peregrina*
L. var. *Xalapensis* St John & Warner.

"No. 19,922. *Filago*

♂ fls. with very slender corolla
but the corollas with distinct limb.

♂ fls. in a head 3 or 4 or 5

♀ fls. in a head 3 ^{to 5,} the corollas
bilobed and with obsolete limb.

Pappus-hairs as long as corolla.
Outer invol. bracts (Cont. p. 256)

"No. 19,923. *Lasthenia*

Stems decumbent at
base, fleshy. ^{↑ weak,} Wet low ground.
Cont. p. 256.

Yolo Causeway, 7 mi. e. of Davis,
near Plumtree sta., Yolo Co., May 17, 1940.

"No. 19,924. *Dorcinigia*

Cor. blue, white field
on lower lip with 2 yellow
spots. "Platform" flat; lobes
lower lip quadratisch, with
acute central point.

"No. 19,925. *Navarretia leucoceph-*
ala Benth.

"No. 19,926. *Damasonium califor-*
nicum Torr. Forms a white-
flowered little zone on margin of
a pool-bed, very suggestive in
flowers of *Ranunculus* at a
distance.

"No. 19,927. *Lasthenia*

Cor. tubs thinly fur-
nished with minute spreading
gland-tipped hairs. Rays 11, 13.
Makes the mile-wide colonies
on the lowlands about the
Yolo Causeway.

"No. 19,928. *Allocarya stipitata*
Greene var. *micrantha* Mcbr."No. 19,929. *Allocarya stipitata*
Greene var. *micrantha* Mcbr.

"No. 19,930. *Lippia nodiflora* var.
rasa (D. Don) Moldenke Railway embankment.
Cor. pink; upper lip small, transversely
quadrilateral, slightly notched;
lateral lobes lower lip occupying
a lateral position, transversely
quadrilateral (broadly oblong)
and larger than the upper lip;
middle lobe lower lip largest,
transversely oblong, very long

transversely. Bracts rhomboid-ovate, acute,
 No. 19, 931. *Deschampsia danthonoides* (Trin.)
^{puberulent.}
^{Monroe ex Benth.}
 This grass on the moist
 or wet bottom land.

- Cont. from bottom p. 253. Filago.
 Outer invol. bracts 5, very
 strongly carinate at base.
 The ♀ fls. have an outer position
 in head, the ♂ fls. an inner
 position. ♂ Corollas yellowish.

- Cont. from bottom p. 251. The
 ovule in *Coumra stansburiana* is
 solitary inserted in very base of
 ovary cavity and borne on a funiculus!
 cf. Bot. Stansbury, pl. 3.

- Cont. from p. 254. *Lasthenia* (19, 923).
 Cup of involucre with a distinctly
 salient ridge below each tooth!
 Pappus paleaceous. Ovules puberulent
 with straight short apically

appressed hairs. Corollas pinkish.
 Receptacle flattish, the flowers
 borne on papillae-like pedicels!

- Left Berkeley, drove to Valleyo
 (cf. p. 252) and Little Oak in Vaca
 Valley. The hills are still very
 green (cf. p. 245), only the southern
 exposed shoulders beginning to brown.
 Went on to Sacramento, thence back
 to beginning of Yolo Causeway at
 west end and collected nos. 19, 924
 to 19, 931. On the bottoms of the
 lowlands the flowering display
 is marked. Went on to Vaca-
 ville and into Lagoon Valley, turning
 off highway towards the lagoon in
 valley, thence south through Pena
 Pass and down into the Sid
 Clark Valley (after an old
 settler), turning south on the road
 that goes by Dover School, a

characteristic country school house where Edwin Marchant as a lad once attended.

In coming across the plain from Dixon to Vacaville the haze in the atmosphere emphasized the two foothill ridges east of Vaca and Pleasant valleys; the inner ridge next the valleys is dominated by Putnam Peak at the north and Drake Peak at the south; the outer ridge by Rocky Peak at south end and an unnamed but prominent bulky mountain at north end nearly opposite Putnam Peak.

From Down School, see above, I returned to Berkeley.

- M. French Gilman. I found him to be a very remarkable man, simple and unpretentious, but careful, observant, critical in his field work and knowing species extremely well in the field - but not attempting to name species of difficult genera such as *Cryptantha* in the field. He knows the seedling stage of many interesting desert plants such as the *Yucca*. He has cultivated many desert species. He has humor of a quiet dry kind. Regarding some species that had been proposed by Rydberg (Cont. vol. 60, p. 265.) X.

- Cont. from bottom p. 212. The Englishman Johnson planted the vines say, Gilman and doubled the fruit trees. Hungry Bill's son-in-law comes back to the place and uses it as a summer residence. Hungry Bill was a Pinte, Bill Williams a Shoshone, I think Gilman said.

- Death Valley. For other Death Valley species see list of determinations of M. F. Gilman plants sent him in 1940 and previous years.

- *Centronadia*

Cont. from p. 244. Collected on Deer Creek, 4 mi. S. of Pixley, Tulare Co. It covers thousands of acres of alkaline flat, here, and elsewhere up and down the valley. No. 19,901. May 7, 1940.

- Chet Brown, 1830 H st., Fresno (trader)
- H. Donald Curry, Park Naturalist,
Death Valley.
- A. F. "Sam" Houston, Park Ranger,
Death Valley.
- Ogsden, Chief Ranger,
Death Valley.
- Saint Frances Cafe, Bakersfield. ^{good eating place}
- Rosemount Grill, 1011-9th st., Sacramento ^{good eating place.}
- "We give man-size orders".
- Th. Burke, Atolia.
- Willard E. Shanteau, Death Valley
- M. French Gilman, " "

- Cont. from p. 233. I climb out of Panamint Valley into the Panamint Range and see southward a great broad valley plain,* vast and broken and lonely, lying on west side of the Argus Range. A part of it may be Darwin Wash.

I climb on up to top of plateau and on this great wide plateau bordered by a rim of low ridges I stop and make a breakfast camp. *Yucca brevifolia* is on westerly part of this great plateau - Centennial Plateau.

* or low-lying valley hollow,

* *. Cont. from p. 56. The lookout attendant, a young fellow, pointed out the landmarks in the ranges. When I was introduced to him he said: "I've been studying your book". Mr. Blood at the Supervisor's office in Susanville made a similar remark. In each case it meant the Manual.

Wyethia, cont. from p. 248, no. 19, 910.
Note the dense mat of long hairs on root-crown at base of leaves, like a woolly tuft.